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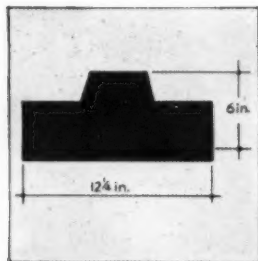
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BUSINESS

JOURNAL OF MANAGEMENT

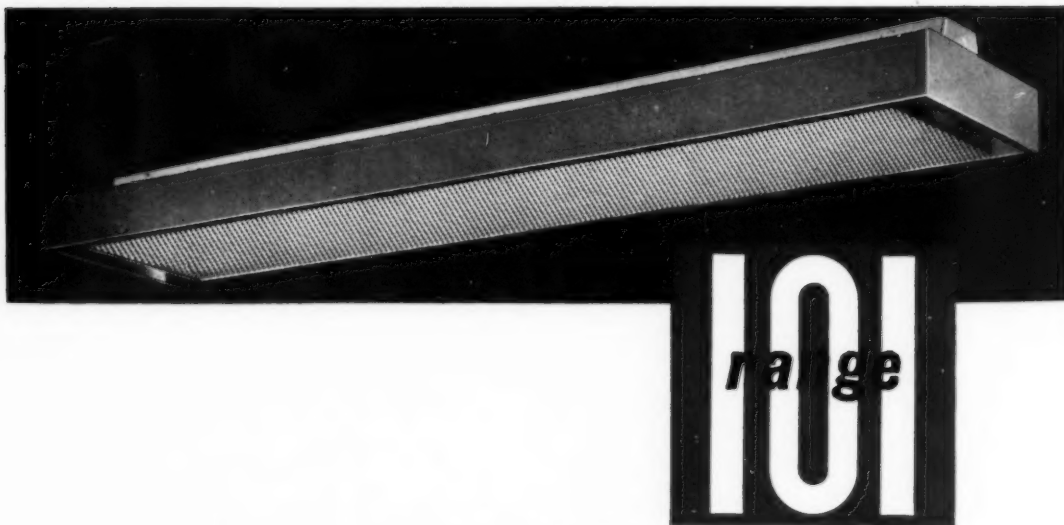




one of many decorative designs

The brilliantly successful G.E.C. 101 range of fluorescent fittings offers a wide choice of designs for every lighting requirement — in executive offices, showrooms, shops and stores, as well as factory areas. They are made for 1½ to 8 ft. single or twin Osram guaranteed tubes, and all employ the famous G.E.C. Basic Channel with its proven advantages of versatility and economy in installation and maintenance.

The fitting illustrated, F41142/3, is stoved enamelled blue/grey and the glass gives a substantial measure of control of the downward light.



fluorescent lighting fittings

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December, 1958

BUSINESS

JOURNAL OF MANAGEMENT

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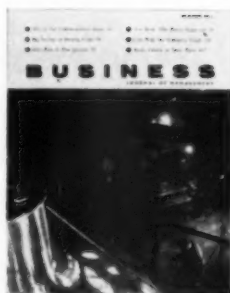
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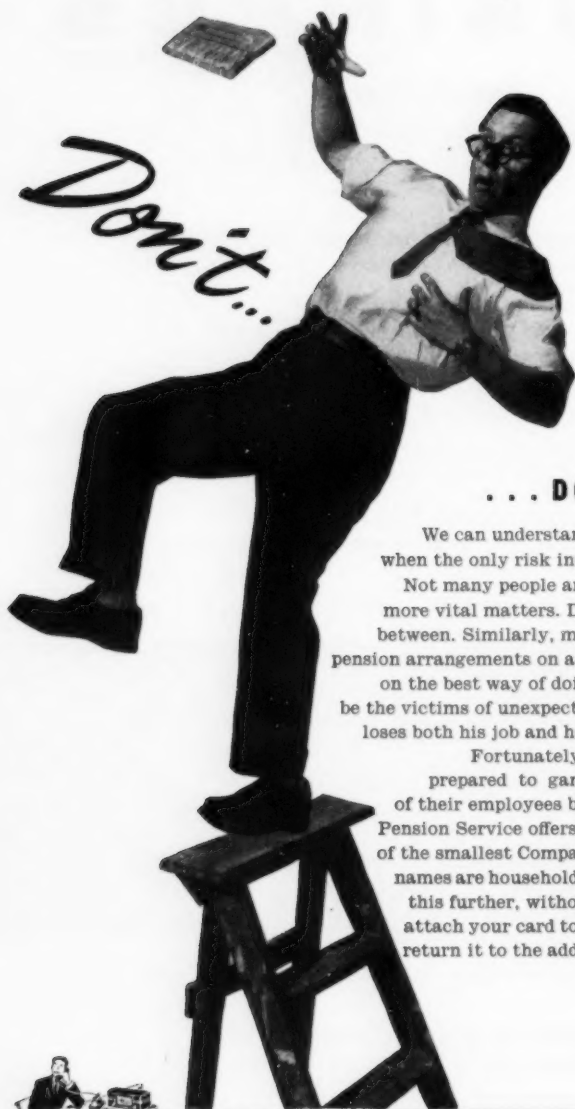
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COVER PICTURE

Copper vessels at a brewery of Courage and Co. Their appearance is enhanced by anti-corrosion lacquer based on epoxy resin. A Shell photograph.

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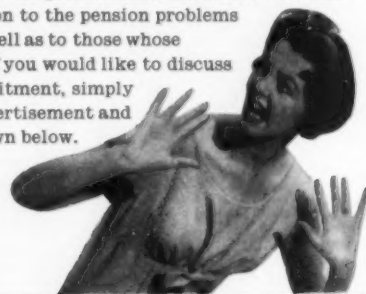


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CFM 114/LI

ECONOMIC PROSPECT

Survey and Forecast of Business Conditions

Unemploy- ment danger foremost

► The first great battle of 1959 will be against unemployment, which may reach 2.8 per cent in the New Year. To help fight it the Government will spend 11 per cent more in the public capital sector and make loans to building societies.

► A further cut in Bank Rate, after last month's cut, is unlikely, due to renewed fear of inflation which may arise from increased Government spending and union pressure for full employment.

► Professor A. W. Phillips (London School of Economics) suggests 5½ per cent unemployment would be needed to keep wage rates stable. If this figure is correct, but proves unacceptable to the public, then we would seem to face a choice of stricter restraint by the unions (see 'Labour News,' p. 17) or of continuing inflation.

Export outlook brighter

► An upturn in world trade seems likely early in the New Year. Pointers are: Stock Market firmness in recent months, recent rises in tramp shipping freight rates: 35 per cent of firms answering a recent F.B.I. survey felt more optimistic than four months earlier, only 17 per cent less so.

► Since June U.K. exports have been only about 1 per cent lower than a year earlier, compared with an 8½ per cent drop in the second quarter. North America now takes 16 per cent of our exports, with the U.S. a bigger and stabler market than the six Common Market countries. Aircraft industry and whisky exports are setting new records.

► Gold and dollar reserves are the highest since 1951, retail prices remain steady, and raw material prices may be about to rise.

Upturn signs stronger

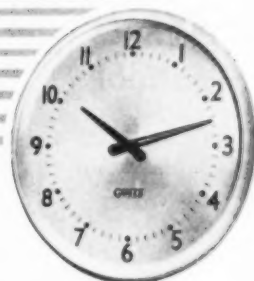
► Increased demand for consumer durables is a sign of approaching recovery. New demand may trigger a revival in capital goods, which have so far held down general output.

► Production of steel—a key indicator—is nearing a turning point. Demand for it is now generally steady, and even increasing for finished steel and continuous mill sheet. The proposed increase in nationalized industry's capital expansion funds should give a strong boost after mid-1959.

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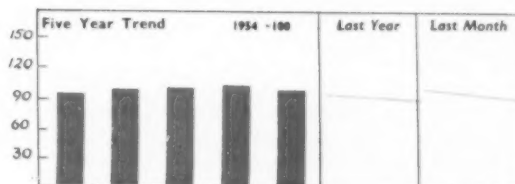
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STATE OF THE NATION

- Five key indicators to the state of the Nation, followed by 18 indicators to the main economic influences.

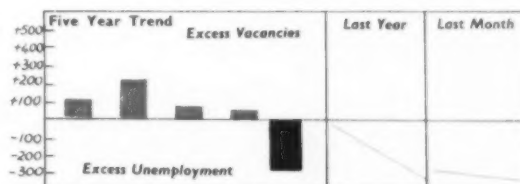
INDUSTRIAL PRODUCTION ▶

Output may continue to fall for the next few months. Revised August index, based on 1954 as 100, is 89, compared with 96 in July, 92 in August last year and 87 four years earlier. Although demand for steel, a key indicator of industrial output, has declined again, demand should increase soon due to the disappearance of excess stocks, and to sustained prices.



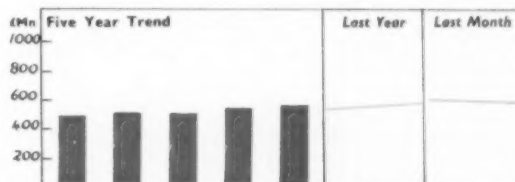
EMPLOYMENT POSITION ▶

Unemployment figures are likely to continue rising, with the peak coming in January. Excess number of unemployed over unfilled vacancies was 347,000 in October, compared with 297,000 in September. In October last year there were 1,000 more unemployed than vacancies, but four years ago there were 86,000 more vacancies than unemployed.



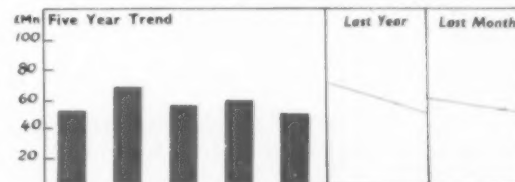
MONEY FLOW ▶

Average daily bank clearings show that business money continues to circulate seasonally faster, although easing off slightly. October daily average was £551 million, compared with £562 million in September, £529 million a year earlier and £443 million four years earlier.



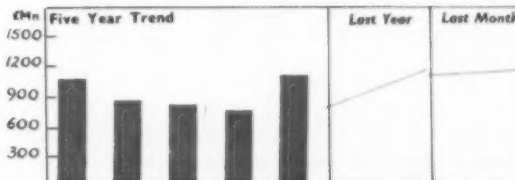
TRADE GAP ▶

Gap between imports and exports has fallen and should remain steady for some months. October excess of imports over exports has been placed provisionally at £49 million, compared with £59.9 million in September, £33.4 million in August, and £70.3 million in October last year. Four years ago the figure was £13.3 million.



GOLD AND DOLLAR RESERVES ▶

Sterling area gold and dollars have reached the highest level since 1951. October reserves rose to £1,134 million from £1,114 million in September. A year earlier they stood at £748 million and four years earlier at £1,048 million.



● KEY TO THE CHARTS. Bar charts show the 'Five Year Trend,' taking for each year the average monthly value during the most recent three months. Graph lines for 'The Last Year' compare the most recent month with the same month a year ago. Graph lines for 'Last Month' compare the most recent month with the previous month.

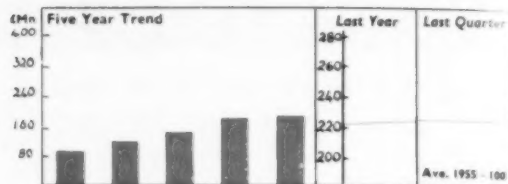
● READERS' ENQUIRIES. Spot enquiries by letter or telephone, involving no research, are answered free. More detailed enquiries will be charged for at cost, on the basis of professional staff time absorbed. This applies to both general management and economic enquiries.

MAIN ECONOMIC INFLUENCES on the STATE OF THE NATION

1. Trends in CAPITAL SPENDING

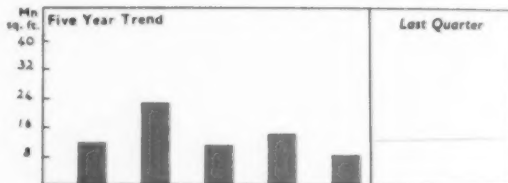
INDUSTRIAL INVESTMENT PLANS ▶

Industry's investment plans so far show no signs of increasing, and may even fall. Second quarter spending this year—£227.8 million—was 2 per cent higher than a year earlier. Expenditure on plant and machinery continued at the same level as a year earlier, whilst that on vehicles went up by one-third compared with two-thirds the previous quarter. Spending on building work rose slightly at the same time.



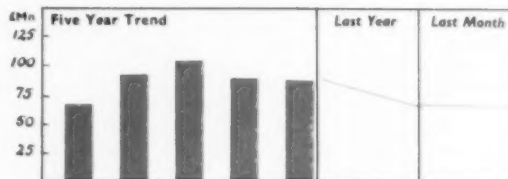
FACTORY BUILDING APPROVALS ▶

Although factory building approvals are rising, they are 30 per cent down on a year earlier. During the third quarter of this year, the area approved, according to revised figures, was 12.26 million sq. ft.—1.31 million less than the previous quarter, and 5.74 million less than a year earlier.



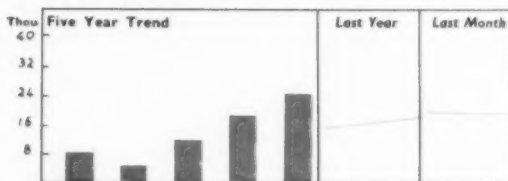
MACHINE TOOL ORDERS ▶

Machine tool orders continue to decline less rapidly, and orders in hand represent nearly 12 months' work. The latest available figure, for August, shows £63.2 million orders outstanding—£1.1 million less than July and £25 million less than a year earlier, when orders in hand represented nearly 14 months' work.



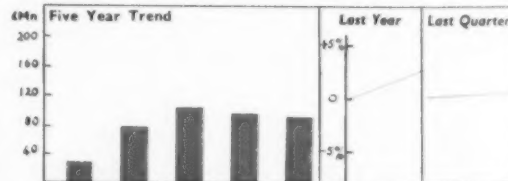
INDUSTRIAL HIRE PURCHASE ▶

Industrial hire purchase has shown a slight seasonal rise, but is still below last year's level. The Board of Trade provisional index for industrial plant and equipment in September was 89, against 86 in August and 112 a year earlier. September H.P. Sales of new cars and new and used commercial vehicles totalled 17,769, against 18,639 in August, 16,197 a year earlier, and 9,002 four years earlier.



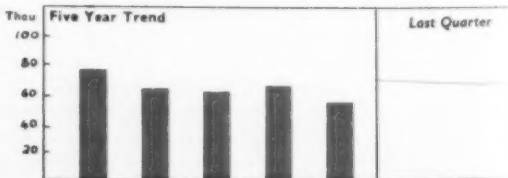
MATERIAL STOCKS ▶

Manufacturers' stocks showed a slower rise in the second quarter of 1958. So far they have increased by only 1 per cent, as against 5½ per cent a year earlier. This trend has been accompanied by growing stocks of finished goods and smaller increases in work in progress. On the other hand, industry is rapidly running down its stocks of fuel and raw materials.



HOME BUILDING STARTS ▶

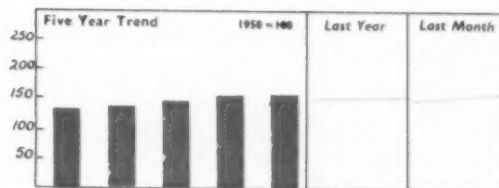
Home building starts are at a reduced level, but there are signs of an increase, which should become appreciable by the New Year. Number of houses started in the third quarter of this year was 66,490, against 74,099 a year earlier and 89,880 four years earlier. Houses under construction in the third quarter this year numbered 232,896, compared with 239,657 a year earlier.



2. Trends in CONSUMER SPENDING

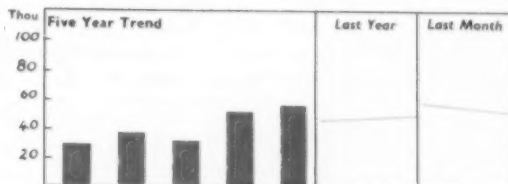
RETAIL SALES ▶

Retail sales are rising seasonally, but are otherwise likely to remain quiet, despite credit relaxations. The September index for all kinds of business was 151, against 146 in August, 149 a year earlier and 129 four years earlier. Furniture sales, however, are up by 5 per cent on a year earlier, and sales of household goods by 3 per cent.



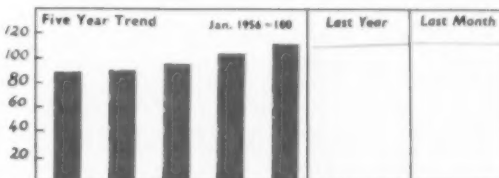
DOMESTIC HIRE PURCHASE ▶

Domestic Hire Purchase has risen—a seasonal trend possibly reinforced by recent relaxations. Board of Trade index for September was 123, against 93 in August and 120 a year earlier. Used cars sold on H.P. contract in September numbered 46,970, compared with 55,506 in August, 43,299 a year earlier and 27,806 four years earlier.



WAGE RATES ▶

Wages rates continue their slow rise. Index for September was 114.3, compared with 114.1 in August, 113.7 in July, 111 a year earlier and 92 four years earlier. No large increases seem likely in the next few months, but unions may press for a shorter working week to keep members employed.



PERSONAL EXPENDITURE ▶

Personal expenditure is showing an appreciable rise which should become steeper soon. This year second quarter spending was £3,685 million compared with £3,456 million in the first. Third quarter figures may well reflect the influence of credit relaxation.



3. Trends in PUBLIC SPENDING

PAYMENTS FROM EXCHEQUER ▶

Expenditure to date this financial year is slightly higher than a year earlier. The current figure of £2,815 million is about £50 million higher. New schemes for Government expenditure should further increase the difference soon.



EXCHEQUER DEFICIT ▶

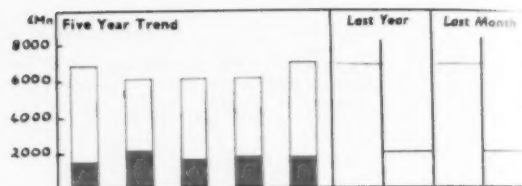
Exchequer deficit so far this financial year is about £41 million less than a year ago. This is an improvement of about £27 million on the previous month's position, but may be reversed later by Government anti-recession spending.



4. Trends in CREDIT POLICY

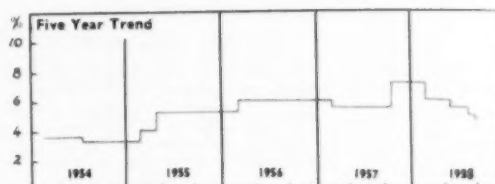
BANK DEPOSITS AND ADVANCES ▶

Both bank deposits and advances are rising slightly. Total deposits at the end of October were £6,745 million, compared with £6,649 million in September and £6,530 in October last year. Advances this October were £2,096 million, compared with £2,027 in September, and £1,922 million in October last year.



BANK RATE ▶

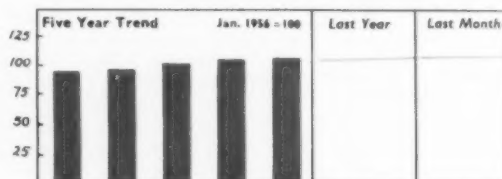
Despite sterling's continuing strength, further Bank Rate cuts are unlikely yet. The most recent reduction—from $4\frac{1}{2}$ to 4 per cent—was made on November 20. The chart depicts changes over the last five years up to mid-November, before the latest cut.



5. Trends in MARKET PRICES

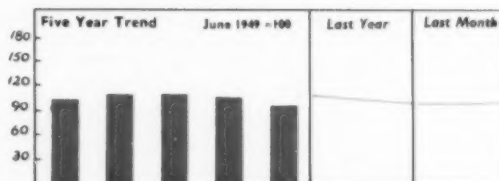
RETAIL PRICES ▶

Retail prices have been rising recently after the mid-year plateau. October index was 109.4, or 1 point above September, 2 to 3 above a year earlier and 15 points above four years earlier. The rise in the index was due mainly to increases in the average prices of potatoes and milk.



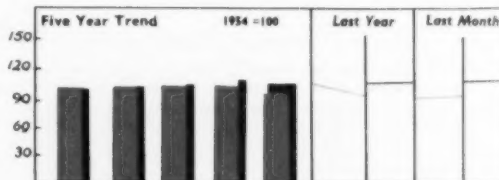
RAW MATERIAL PRICES ▶

Raw material prices have levelled off and may even be due to rise soon. October provisional index—now based on 1954 as 100—was 93.1, compared with 92.5 in September, 104 a year earlier and 101 four years earlier. The slight rise was due mainly to higher prices for non-ferrous metals (including a 13 per cent rise in copper). Meantime, raw wool fell nearly $4\frac{1}{2}$ per cent, and there were slight decreases in raw cotton, jute and imported timber.



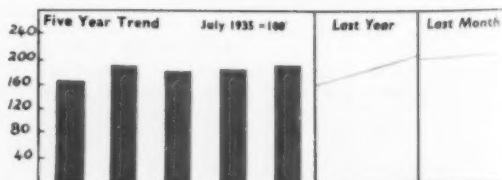
TERMS OF TRADE ▶

Terms of trade appear to be levelling—a hopeful sign. The latest available import price index—for October—was 98 for the second month but was 1 point lower than August, 5 points lower than October, 1957, and 3 points lower than four years earlier. Export price index for October also remained at 109 for the second month after the 1 point August drop, and was 2 points lower than October, 1957, but 2 points higher than four years earlier.



SHARE PRICES ▶

Share prices have risen quickly recently, but may pause before a further rise. At the time of going to press, the "Financial Times" index of industrial ordinary shares is around 212, or 7 points above the October average and 45 points above a year earlier. The recent rise was based on the market's confidence in approaching economic recovery, whose actual arrival buyers are now likely to await before resuming their activities.



Induction Heating - 1

Electro-magnetic induction was discovered by Faraday and used by him to evolve the electric motor. In some cases, induction can be a nuisance by causing heat losses to arise from induced eddy currents in nearby pieces of metal, but in industry today those heat losses are being turned to good account as a method of metal heating.

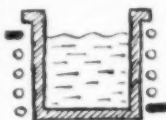
Induction heating produces heat only in the work piece. This is a fascinating and spectacular process which has the additional merit of being extremely effective. An important feature of induction heating is that it gives rapid temperature rise with no time lag, starting being instantaneous. Perhaps its greatest advantages are that it can be used in automatic processes and does not demand skilled labour.

Induction heating can deal efficiently with all the applications outlined below, and including metal melting, preheating and stress relieving, surface hardening, heating of large components, preheating of steel tubes for manipulating, heating for shrinking, for forging and extrusion, as well as for the heating of vessels. There are various methods of applying it, the method to be used being dictated by the application.

Technical details relating to the choice and use of individual types of induction heating will be set out in a subsequent data sheet.

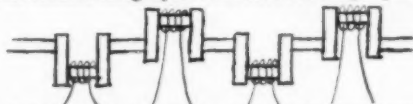
Metal melting

The oldest and largest application of induction heating lies in the melting of metals. The outstanding advantages are: freedom from deleterious gases and products of combustion and other contaminants, rapid speed of melting, low running costs, improved working conditions and reduced metal loss.



Metallurgical processes

This covers a large variety of processes which may be basically divided into surface heating and through heating. Most processes fall into the former category and are used for the purpose



of skin hardening. They include the treatment of such components as: pins, camshafts, crankshafts, rollers, cylinder liners, gear teeth, rocker arms and shafts and valve stems.

Through Heating

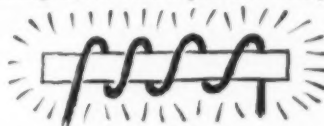
When the current in an induction coil is maintained for a longer period it results in the heat

engendered in the work piece penetrating to a greater depth and eventually throughout the piece. It is largely used for the heating of slugs and billets for upsetting and upset forging, flanging and nosing, shearing and forging and bolt blanks for heading.



Annealing

Induction heating is the ideal method of altering the character of metals for a special purpose. Annealing and its related process of tempering,



normalising and stress relieving are prominent in this category. In the case of annealing, one feature of the treatment is that it can be localised, while induction tempering can do in one minute what would require half-an-hour or more with conventional furnace heating.

Brazing, soldering and welding

Brazing and soldering by induction are the quickest and cleanest methods of joining metals together, and it is often beneficial to re-design the parts so that the fullest advantage can be taken of induction heating.

Brazing can be used in the case of: carbide inserts for tools, tips for rock drills, parts for universal joints etc., while the many applications of soldering, are well-known. It was not until well into the present century that the age-old craft of welding became a positive aid to greater productivity. Induction welding produces a good, clean weld because oxidation is almost absent.



Miscellaneous Applications

Induction heating can be profitably used for a large variety of purposes, including the fusion and hot pressing of powders, heating *in vacuo*, gas determination in metals, fusion of glass, chemical work and many other processes.

For further information, get in touch with your Electricity Board or write direct to the Electrical Development Association.

Excellent reference books are available on electricity and productivity (8/6 each or 9/- post free)—“Induction and Dielectric Heating” is an example.

E.D.A. also have available on free loan a series of films on the industrial use of electricity. Ask for a catalogue.

Issued by the Electrical Development Association, 2 Savoy Hill, London W.C.2.

1957/2



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MARCH OF BUSINESS

ADP and executive development

The electronic computer is now making its British debut as a management training aid. Last month, representatives of industrial firms, Government departments and universities took part in the first of a series of 'decision-making laboratory' sessions at the London HQ of IBM United Kingdom Limited.

The IBM method follows the same lines as the exercise developed last year by the American Management Association. A mathematical model is built of a simplified business situation—in this case the marketing of a single, unidentified product in four areas. Divided into three 'companies,' the 12 participants make financial and policy decisions on such things as production, plant investment and pricing.

They have 20 minutes in which to make decisions for each three-month operating period. The advantage of using the IBM 650 computer is that the simulated results of their policies are available almost immediately.

The exercise was originally developed for use in IBM's own executive development programme. The British company emphasize that they are not entering the training field—their purpose is simply to offer a new technique to educational bodies.

They also emphasize that the exercise does not teach anything on its own. What it does is to give students a unique opportunity to put into practice principles which they have learnt in other ways. The marketing model—aimed at middle management—is designed to show

the interaction of different management functions.

An article discussing the potentialities of this training technique will appear in a forthcoming issue of *BUSINESS*.

John Diebold joins new ADP magazine

John Diebold—internationally famous authority on automation—is to head the panel of advisory editors on *Automatic Data Processing*, the new management magazine devoted to electronic computing and other data processing systems.

In the States, Mr. Diebold has established himself as the foremost management consultant in this rapidly developing field. The conferences which he has run in Britain have aroused widespread interest. Recently he joined forces with Urwick, Orr and Partners Ltd., the British management consultants, in setting up a new company called Urwick Diebold Ltd.

Mr. Diebold's unique experience will help to ensure that the new magazine is both practical and far-sighted in dealing with the immense opportunities which are now being

opened up by developments in ADP.

The first issue of *Automatic Data Processing* was sent to all *BUSINESS* subscribers two weeks ago. Monthly publication begins in March next year. Then the magazine will be on a separate subscription.

The cost of 12 monthly issues will be 45s., post paid. But businessmen who take out a year's subscription now can do so at the Founder Subscriber's rate of 30s. only.

Management: a university course?

The old argument about a British management course, on the lines of the one at Harvard, was neatly summarized by Viscount Chandos, addressing the annual conference of the Institute of Directors:

"Nobody who is exercising the simplest function of management without a theoretical knowledge of his profession can do his job as well as those who have one."

The Institute are likely to have a big hand in establishing a management course, and are seeking a change in their Royal Charter to this end.

Next Month

Tax Consultants

... they may save firms large sums of money. How do they work? How much do they cost?

Powered Boats

... executives in a different element. How they use boats for sport, pleasure—and sometimes business.

The problem is not money. It is the difficulty of interesting a university in a management course and finding professors for it.

Curriculum is also a problem. Though the Harvard course is designed for American business, much of it can be 'lifted.' A broad course is essential. Too many universities are producing learned scientists in narrow fields who are virtually illiterate when it comes to expressing their ideas. The Massachusetts Institute of Technology, one of the greatest technical colleges, gives a broad programme in the humanities.

Recessions are a golden opportunity

When a recession hits a firm it is time not to cut back and sack, but to reorganize. And this may well involve taking on more people, according to E. F. Brown, chief accountant, Howard Farrow Ltd., in a paper presented to the Institute of Cost and Works Accountants.

Cost reduction is not the same as cost cutting, although a panicking management may confuse them. Their first thought is often to sack a few people. But when the list of those who cannot be sacked is completed there is generally only the office boy left—and he means only a few pounds a week.

The mistake is to review people instead of jobs, finding out what is done and why. Management ability and technical skill are the life-blood of a business. Blood-letting might be fatal. A transfusion could be a tonic.

Consultancy service in Ireland

The Irish Management Institute is starting a consultancy service, organized in collaboration with the European Productivity Agency. This is especially for smaller firms, who shrink from using consultants.

American specialists will be made available on a short-term consultancy basis for about £10 per day.

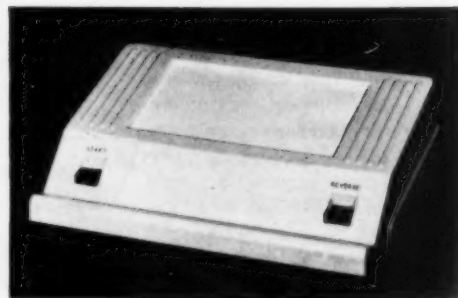
PEOPLE PRODUCTS PLACES 1



NEW chairman of CIE—the Irish Transport Authority—is Dr. C. S. Andrews. Since 1946 he had been managing director of Bord na Mona, the highly successful Irish Peat Development Board. His unexpected selection for the CIE post shows the Irish government's awareness that the many problems of State transport require not a transport expert but a management expert.



GIANT 18-storey building being built in Southwark Street, South London, will be the largest in the U.K. when completed in 1960. To accommodate some 4,500 Ministry of Transport and Civil Aviation employees, it will cost about £5 million.



USEFUL gadget for the executive who writes phone and memo notes on the backs of envelopes is the Telenote. After writing, he has only to press the start button for the paper to move across the frame, leaving a clean surface. Reverse button 'plays back' messages. The gadget's tiny electric motor is battery-powered.

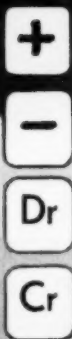
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DECEMBER, 1958

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But there's no need to go under water to prove the value of the Minifon. Use it anywhere—any time—in the office—outdoors—while travelling . . . Small, light, battery-operated, easily carried in the pocket or briefcase, the Minifon is always ready to record facts, figures, conversations, minutes, reports—for transcription when convenient.



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- * Weighs only 2 lbs.

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BELGIUM Brussels	minifon Belgique, 330, rue Royale. Tel. 170246.	ITALY Milan	minifon Organizzazioni, Medico Alfredo, Via Panfilo Castaldi 8. Tel. 627197.	SWEDEN Stockholm Göteborg Halmö	Ab Bolinder's, Specialmaskiner, Frihamnsvägen, Tel. 630430. ditto, Karl Gustafsgatan 18, ditto, Rundelsgatan 21.
DENMARK Copenhagen	Christian Bruhn, Ankerborg, Vester Voldgade 83. Tel. MINERVA 5010.	NETHERLANDS Rotterdam Amsterdam Hengelo	Veenman's K.I.B. Industriegebouw Goudsesingel, 108-112-128, Tel. 120196. ditto, Keizersgracht 480. ditto, Bornsestraat 6.	SWITZERLAND Basle	Tangent A.G., Steinenvorstadt 11, Tel. 061/235656.
		NORWAY Oslo	Gustav A. Ring, Akersgata 9. Tel. 427050.		

Manufacturers: Protos GmbH · Hamburg · W. Germany

One of the consultants, E. H. Van Delden, has served as management development specialist with the American Management Association; and has led executive development programmes at Harvard, Cornell, Columbia and other universities. He will assist in planning development programmes, and advise on systems of appraisal and performance standards.

Allan V. de Marco will advise on cost reduction programmes, standard costs, budgetary control, and variety reduction.

Nuclear power in perspective

Nuclear power is one of the magic phrases of the moment. Its demands seem so large that many firms in 'fringe' industries feel they can contribute towards it. But they hesitate, because they lack information for making plans.

They will be helped by the report* of a conference held by the F.B.I. It puts nuclear energy in perspective.

Opening the conference, Sir George Dowty, of the Dowty Group, recalled how his firm burned their fingers with gas turbines, which seemed 12 years ago to have a sparkling industrial future. It was to save others the same experience that the present conference was called.

Sir Edwin Plowden, chairman of the Atomic Energy Authority, showed how nuclear power was encouraging industry to produce new materials, or make them more cheaply.

The report is easy to read. There are short point-by-point summaries of each paper.

Human relations in industry

Social research can help industry

* Nuclear Energy, Federation of British Industries, 15s.

PEOPLE PRODUCTS PLACES 2



KEY to David E. Burton's new job as head of the London technical sales department of Rocol Ltd. is a lot of experience packed into a few years. Mr. Burton did a two-year post-graduate engineering course with Hawker Aircraft Ltd. before becoming assistant works manager for the Hanworth Engineering (Aircraft) Co. Ltd. His latest appointment emphasizes his specialist knowledge of cutting lubricants.



LIGHT, spacious and colourful new retail offices of W. H. Smith & Son Ltd. are nevertheless functional. Two-tone cabinets are for lateral filing. Furniture (other than chairs) was built by Conran Furniture.



LATE entry into business life has not prevented 42-year-old F. Cooke, a director of Spencer, Heath & George Ltd., from getting to the top. Leaving school at 13, Mr. Cooke joined the Berkshire Constabulary via the Guards before the war. Commissioned during the war, he rose to the rank of major. In 1946, after training under the Ministry of Labour and National Service business training scheme, he began a two-year training course with his present firm, emerging as sales manager.

Detection or Devastation

MUCH can be done to prevent fires, but no matter what precautions are taken fires still break out and cost this country over £25,000,000 per year.

By having Gents' Fire Detectors installed an alarm is given immediately a fire occurs so that it can be contained and prevented from becoming a major conflagration. Fire Officers stress that they can act efficiently if only a warning is given in time.

The Gent 1151 Electric Fire Alarm system is so super-sensitive that an automatic warning is given immediately fire breaks out—the fire detectors react to any dangerous rise of temperature which precedes the outbreak of fire—in fact they react more quickly than a thermometer. These detectors—which have contacts sealed against dirt and corrosion—are so designed* that a reliable warning is always given without false alarms.

Detectors are situated strategically around the building and when one is actuated an alarm is given automatically to the Local Fire Station enabling the brigade to proceed at once to the endangered premises. Being self-indicating it immediately discloses, even when a fire is not apparent, where a dangerous situation exists.

So reliable and foolproof is the system and so complete is the protection given that the system has received the approval of the Fire Offices' Committee after passing their very stringent tests. This approval is the "hallmark" of reliability by which, under certain circumstances, a Company which has this system installed may qualify for valuable insurance rebates.

The whole system has been so designed that the cost of both the equipment and the installation are lower than other comparable systems.

Write to us now for details of this very efficient and foolproof Fire Alarm System.

*Designed to British Standards Code of Practice "Electrical Fire Alarms"

GENTS' **OF LEICESTER** **1151 AUTOMATIC** **FIRE ALARM SYSTEM**

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—in training employees and even in designing machine controls.

Industry is already making limited use of social research, according to a report* published recently.

For instance, management and worker reactions to the technical research and development work of the Cutlery Research Council are being studied to see how best the Council's staff and publications can be used to spread information.

In South Wales the impact of the large new steel plant on the trade union structure is being studied. So are its effects on the community.

Labour relations in State industries

Protagonists of nationalization said it was the only way to obtain good labour relations. But a non-political (or nearly non-political) report† by the F.B.I. produces evidence that in this respect the success of nationalization is doubtful indeed.

Industries with previous records of good labour relations, and now nationalized, still have internal peace; but those with histories of strikes and go-slows are still troubled with disputes. In fact, coal-mining, in spite of an above-average increase in wages and improved conditions, has an increasing absenteeism.

Why is this? The report cites the inability of the disgruntled worker to find an alternative employer in his industry; the disappointment when the worker finds that he is not controlling the industry; and the fact that the Government's economic policy has influenced trade disputes.

This is particularly important. In nationalized industries, instead of being a mediator, the Government are drawn into the dispute as a participant. The political leanings of the majority party may have a direct bearing on any settlement.

* Human Relations in Industry and Individual Efficiency in Industry, H.M. Stationery Office, 3s.

† Nationalisation, Federation of British Industries, 5s.

Workers into Capitalists

There have been three developments which may help to stabilize industrial relations.

1—Shares for workers

Instalment buying. A development of the general expansion of hire purchase, two such schemes were introduced recently by Bowmaker (the industrial bankers and finance house) and another company. They provide stocks and shares for a range of approved British companies.

People buying their shares under these schemes own them from the beginning, although the shares remain in the physical possession of the firm lending the money. An important advantage is that interest on the original loan is claimable against tax and the tax rights of the owner are preserved on the dividends received.

Cash purchase. This scheme was launched by Aims of Industry (an industrial education organisation). Among the first to support it were Tate and Lyle and Portland Cement. Nineteen other companies are interested, representing a total of one million workers.

Participating firms will open non-profit-making shops in or near their pay offices. Here their workers can buy special bearer shares for cash on pay day. These shares will entitle the owners to the same dividends and rights—including the appointment of directors—as ordinary shares, but will not be quoted or handled by the Stock Exchange.

These schemes, along with the recent moves to make trust units easier to buy, do more than make it possible for the working man to obtain a vested interest in private ownership. They stimulate a valu-

able new source of investment in British industry. And, if inflation recurs, the small man's savings might fare better outside fixed interest investments like National Savings. A growth in the saving habit,* which non-depreciating investments could stimulate, could moreover help to take the edge off an inflationary trend.

2—Union self-discipline

The suspension of an entire district committee following the unofficial Shell site strike shows how the unions themselves realize the need to put their houses in order. The severity of the punishment shows how seriously union leaders regard the activities of the militant new left-wing elements responsible.

3—End of a tribunal

The Government's decision to abolish the Industrial Disputes Tribunal—probably taking effect in the Spring—was expected for some time. Although the T.U.C. complained bitterly of the unilateral nature of this step, they had only certain of their members to blame. For, whilst the Tribunal's awards were easy to enforce on the employers, they were virtually unenforceable as far as the rank-and-file were concerned.

It was the Tribunal which set the four per cent pattern for this year's wage awards. On top of an automatic cost-of-living increase for building workers, the Tribunal awarded them, early in the year, 1d. an hour.

END

* The timely publication earlier this year of 'The Challenge of Employee Shareholding' by George Copeman (Business Publications, 19s. post paid) has done much to stimulate interest in this subject of wider share ownership.



CONTACT!

Has your production manager an urgent query?

— You can answer it while you are on the road.

Do you want that urgent quotation sent off?

— You can instruct your secretary while you are driving.

Do you want a van to make an urgent call?

— It can be arranged in minutes although they are all on the road.

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MANAGEMENT AT WORK

IDEAS AND ACTIONS OF PROGRESSIVE FIRMS

Brewers' experiment helps community

WHEN **Hatfield Development Corporation** found they could not finance a civic centre for Hatfield New Town, two brewery firms stepped in to help. Result: 'Hilltop'—an original project designed for the varied social needs of some 9,000 people.

In one building there are a public house, a cafeteria, a main assembly hall, committee rooms, a clinic and kitchen, offices, etc. Flexible layout, to provide different facilities at different times, was planned by the brewery firms, Guinness and McMullen, in conjunction with the corporation.

Guinness, who as a matter of policy do not own taverns, loaned capital for building to the local firm, McMullen; they have no direct vested interest in the project, though they gave considerable advisory help.

Rigid price control is paying off

FIVE YEARS AGO **Servomex Controls Ltd.** decided to base their prices on manufacturing costs plus a fixed economic profit percentage. This policy—conventional for many industries—has been maintained, and in fact the company have not raised their prices since 1953.

Servomex who manufacture servomechanisms, have achieved their price freeze by:

- improving their production methods.
- a much higher turnover which brought discount rates for bulk purchases, although Servomex had to pay more for components bought out.

The company explain that in their specialized trade they were in a position to charge fancy and discriminating prices, but their price policy has paid off as they have increased their turnover four times since they implemented it.

Recently, the company extended their pricing policy to their overseas agents, and as a result export orders have shot ahead by 185 per cent. Previously, instruments were shipped overseas at home trade prices plus freight costs and the ultimate selling price was left to the discretion of the man on the spot. Servomex removed this discretion and insisted overseas prices would be pegged at 'home prices plus freight charges only'. Agents' commissions are met from the home profit margin, and in addition the company now offer

agents supporting advertising in their own countries in return for substantial turnover. New policy has cut overseas prices substantially—hence the 185 per cent sales boost.

Better communications improve service, cost less

ONLY TWO OPERATORS, where previously four were employed, are required to run the new switchboard control recently installed at the European headquarters of the **Canadian Pacific Railway Company** in London.

This does away with the jacks, plugs and cords of conventional office switchboards, reduces movements, and is faster to operate. Canadian Pacific's new telephone system—with 110 extensions and 29 lines to the exchange—is a PABX set-up, allowing extensions to dial other extensions and outside numbers direct.

The switchboard handles only incoming calls. A system of lamps tells operators how many calls are waiting, and to take calls they have merely to move a key. The required extension is found by rapid push button dialling then pushing a 'send' key to ring the extension and connect the caller. If the extension is already in use a device enables it to be rung, and



connected automatically to the outside call when it becomes free.

Feature of the new system is that operators can inform extensions of waiting priority or trunk calls by transmitting a warning note.

Much of Canadian Pacific's telephone traffic is con-

MANAGEMENT AT WORK



This two-part industrial poster comprises a 'message' and impact picture. The idea is that a weekly change of picture will draw attention to the text which remains the same for a month. (See below: Programme gives facts of industrial life)

cerned with travel and movement enquiries. To cut delay in answering these, a special system has been devised. Calls are diverted from the main switchboard to relevant departments where they 'queue' for attention. Nine enquiry lines go to each department, where five clerks can take calls. Each clerk has a control panel fitted with keys and indicator lamps to show which lines are in use or waiting.

Clerks can transfer calls from the queue to ordinary extensions or vice versa, or from the queue to another department. This is done automatically without having to go through the main switchboard.

20 steps to filing a paper

RECENT CONFERENCE on office organization and methods heard methods expert J. Worrall of **Shell-Mex & B.P. Ltd.** give an outline of time wasted in filing and an analysis of the 20 actions often required to put a paper on file:

Pick up paper—get up—move to filing cabinet—select and open drawer—select file position—withdraw file—close drawer—return to desk—sit down—open file—insert paper—close file—get up—walk to cabinet—open drawer—select position—insert file—close drawer—walk back to desk—sit down.

Lateral files were installed on the clerk's desks, and now filing requires only four steps:

Look for file—pick it out—insert paper—put it back.

This of course involved providing a desk that was really functional (see feature on functional desks, page 70).

The best solution, of course, is to avoid filing whenever possible.

Marks and Spencer Ltd. try to do this. Periodically executives are presented with copies of their own correspondence, and asked to throw out all that is not essential. Studies showed correspondence was being filed to provide proof of consigning, ordering, etc., in

case of setbacks, but probability calculations showed that the setbacks would only occur rarely (less than 2 per cent of the time) while the cost, in terms of clerks and space occupied by filing cabinets, of continuing this 'checking from files' was greater than the money saved by keeping check.

Programme gives facts of industrial life

'WORKERS have a stake in success' is the broad theme of a campaign launched recently by **Transparent Papers Ltd.** at their factory in Bury, Lancs. Programme will comprise a poster campaign with poster sites at strategic points in the works. Themes or chapters—each of which run for a month—will pin attention on such subjects as job security, costs, quality of work, teamwork, safety, competition, absenteeism and waste.

Prepared by the J. D. Aptaker Organisation the programme was prefaced by addresses to supervisors and factory trade union representatives to demonstrate that this campaign was not a management propaganda stunt but a serious attempt to persuade employees that they work for *themselves* when they work for the firm.

Many other firms have also adopted the Aptaker programme. Cost of such a programme varies with the number of sites required, but is generally low. For a plant with 100 workers, the cost would be between 3d. and 6d. a week per employee.

Air transport speeds spares traffic

READILY AVAILABLE spares are vital for the after-sales service of **Renault Ltd.**, the distributing company for Renault cars in the U.K.

Approximately 90 per cent of spare parts for Renault

More work need not mean more staff!



The PRIMUS man can show you why



That's all very well, but these office systems cost the earth to install.

This one doesn't. You can use it on all your existing typewriters, teleprinters and accounting and billing machines. There is no capital expenditure.

Won't my office be disrupted whilst my staff are learning to operate it?

Definitely not. Any typist can learn the Primus system in fifteen minutes.

My own system has been evolved to suit my special needs. I don't want it mutilated.

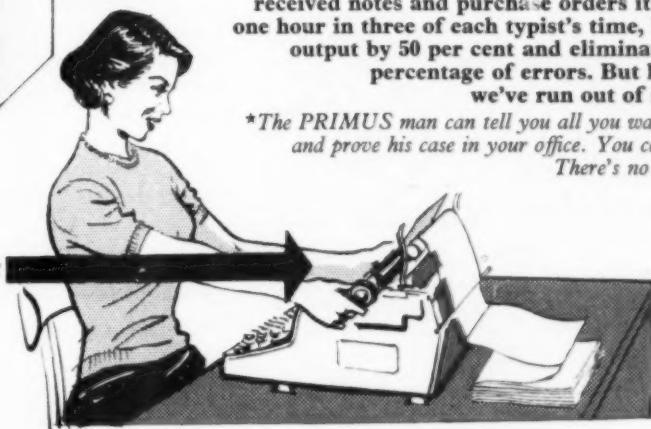
It won't be. The basic principle of Primus Continuous Stationery never varies, but at the same time it can be adapted to suit each individual user's needs perfectly. That's the beauty of it.

What saving will it show me?

On things like invoicing, works orders, goods received notes and purchase orders it will save one hour in three of each typist's time, boost her output by 50 per cent and eliminate a large percentage of errors. But look here, we've run out of space . . .

**The PRIMUS man can tell you all you want to know and prove his case in your office. You contact him. There's no obligation.*

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INCREASED PRODUCTIVITY is the purpose of the service which we offer. The service includes a hardhitting poster campaign lasting twelve months. The posters which are displayed on selected sites throughout offices and workshops and are changed at weekly intervals, cover a wide range of subjects such as Teamwork, Costs, Quality, Output, Waste Reduction, Safety and Employees' Suggestions. Our experienced and qualified staff give introductory and supporting talks to your supervisors.



THE POSTER reproduced above is one of a series designed to tell *YOUR* story to *YOUR* employees, and to show them that what is good for the firm is also good for them.

NO METHOD OF COMMUNICATION between Management and Labour would be complete without personal contact, and our service provides for frequent personal letters to each Foreman and Supervisor to explain exactly what his firm is trying to do.

THIS SERVICE is equally suitable to companies however small or large they may be, and is available at a cost which is but a fraction of the untapped productive potential that exists in every organisation. If, without incurring any obligation, you would like to know more about this Service and the ways in which it can help your Company, please write for further details.

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22

cars are produced in Paris (Renault Ltd. buy in this country such spares as tyres, paint, blinkers and inside trim). Previously, spares from Paris were sent by rail to the coast, shipped by boat, and completed the last lap of their journey by rail right to the company's factory in Acton, London. Invariably an order, from the time it was sent out to the time it was delivered, took three months to reach Acton. Now an order is completed in 15 clear days.

Spares are now transported by a road-air-road service, which collects them from the factory in Paris and delivers them to Renault in London. By contracting to give the air ferry company loads of at least 500 kilos at a time, Renault obtain very competitive transport rates. On the other hand any kind of spare can be sent by the service—even body shells. The transport company, in addition to giving a door-to-door service, make good any damage in transit by paying Renault the list price for the damaged spare.

A feature of the air ferry service is that the Paris parent company can now dispense with crating spares. When an order comes through from London, spare parts are collected as they come off the production floor in one room, and as soon as a 500 kilo lot has been assembled, it can be dispatched. This means that although the whole order will take 15 days to clear, a good deal of it will arrive in London after five or six days.

Adopting this new transport system results in very fast deliveries and useful economies.

Transport economies are important because transport costs for an importer are always higher than those of the home manufacturer, and are reflected in the price of spares.

Sales assistants offered product commission

INCENTIVE SCHEME for sales assistants in hardware stores has been devised by the electrical appliance division of the **Hurseal Heating** group. Assistants will receive a Hurseal radiator for every 12 they will have sold between October 1 and January 31. Incentive represents a bonus worth about £12, but the company prefer to give one of their heaters so that the assistant-owner will become familiar with their product in a personal manner.

Permanent duty for the 'safety cop'

AS IN PAST years, **Automatic Telephone & Electric Co. Ltd.**, Liverpool, used some ingenious ideas during the National Industrial Safety week.

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INTERNAL TELEPHONES



They provide you with a time saving, cost reducing way of carrying on everyday business by providing more prompt, more accurate ways of doing essential routine things such as job costing, work starting and stopping, production control—even the simple, but time consuming business of finding people and talking to them. TR Services noticeably improve the efficiency, smooth the working and tighten the economy of a business simply by keeping a better control on time—something on which we shall be glad to give you much more information. Write for it now while it's fresh in your mind.

**TR Services are provided on a rental basis with full maintenance, the rental being an allowable business expense.*

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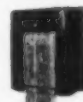
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**PRODUCTION
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Also Fire Alarm and
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TIED UP FOR SPACE?

Not even room to lift an elbow! But wait. Here's a suggestion that may set you free . . . Take a good look at your present floor plan. Isn't there a lot of *wasted* space? The answer is to divide and rule with NSE steel partitioning. NSE is the steel and glass partitioning that can be altered in no time to make offices, passages and bays of different sizes. Every square inch is used *efficiently*. It's even cheaper than wood!



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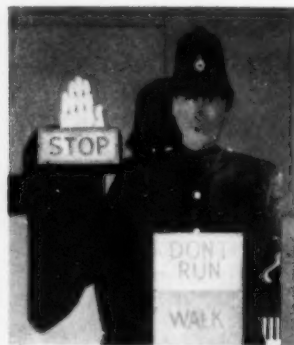
Makers of all kinds of steel office and storage equipment.

Please write to Dept. T, for free illustrated brochures:

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"STEEL STORAGE EQUIPMENT"

149 Borough High St., London, S.E.1 (HOP 5033)
AND AT BIRMINGHAM, BRISTOL AND MANCHESTER

One of them was a larger-than-life figure of a policeman displaying illuminated 'Stop', 'Don't



Run' and 'Walk' signals. In future this will [be placed at various factory entrances and exits.

There was also a photo-electric device which automatically displayed safety slogans and cartoons as employees reached for a copy of a safety publication.

Other features were an exhibition of safety equipment; film shows; a competition; and daily raffles for protective footwear.

Teleprinter prepares invoice sets

STREAMLINED invoicing department at the London headquarters of the **Wiggins Teape** group, paper manufacturers, uses a teleprinter system to process 750 invoices a day. All clerical work for preparing the invoices is done at the Gateway House headquarters in Watling Street, but the invoices are simultaneously printed at the Aldgate warehouse. Here is how the system works:

1—Orders come to the department in vari-coloured folders to distinguish whether they concern urgent orders, those for which invoices have to be mailed separately from the goods, or 'normal' orders. Three comptometer operators go through the folders—working out, by reference to price catalogues, quantities in weight and the prices, less discount. At this stage prices etc. are computed by one operator and checked by another.

2—Orders, (the same forms with annotated figures) then go to a teleprinter machinist, and invoice details are printed on prepared continuous stationery forms, while at the same time a paper tape is perforated on which is 'coded' the information on the forms. The keyboard teleprinters are not used to transmit, but only to prepare a first form and the paper tape.

3—The order folders next go from the keyboard machinists to two checkers. The first invoice form is compared with the original order, then passed to a comptometer operator who checks totals.



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DECEMBER, 1958

25

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4—Finally the paper tapes are taken from the folders and fed into the teleprinters for transmission. The Aldgate warehouse has three page-receivers with continuous stationery in the form of invoice sheets and names, addresses, quantities, etc., are printed directly on them. At the same time, the invoicing department 'take' two further copies of the invoice on receivers in the department from the same tape transmission.

The page-receivers in Aldgate take five copies of the invoice information. By using no-carbon-required paper, a five-part invoice set is easily produced. Reason for five copies of the invoice is as follows:

Invoice goes to the customer or his accounts department.

Advice note goes out with the goods.

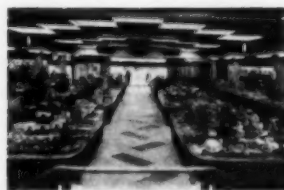
Signature copy goes with the goods, is signed, and comes back as a receipt.

Requisition copy is given to warehouse men so that they can obtain the goods from stock. Warehouse men return their copies to Gateway House where they are used as a check for stock records.

One copy is kept for warehouse files.

For each five-part set in Aldgate, in addition, three copies of each invoice have been produced in the invoicing department. The initial copy, printed when the tape was perforated, is forwarded to the traveller who got the order, while the other two copies, produced at the time of transmission to Aldgate, are used for sales analysis and accounting purposes.

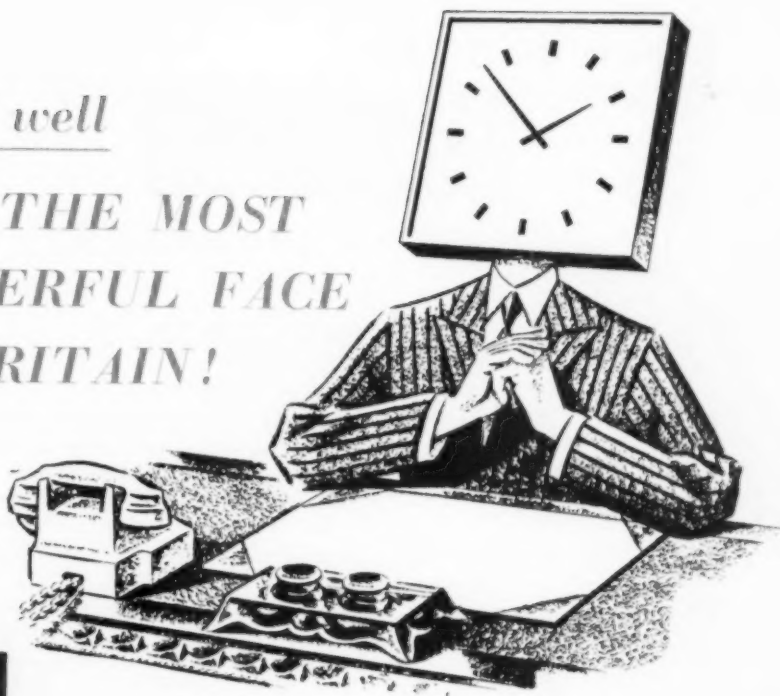
Wiggins Teape's system handles an average of 750 orders a day. Since the group moved to their new offices in Watling Street two years ago, the Aldgate warehouse has become the group's principal distribution centre. Their teleprinter system not only speeds up paper work but ensures that customers get delivery of and are invoiced for, their orders within two days or less.



One feature of the lighting system in a new store opened by Boots Cash Chemists Ltd. is the 'arrowhead' pattern of illuminated ceiling panels. These have the psychological effect of leading the eye to a stairway or the rear of the store—and of 'blocking' the way out.

Note it well

**IT'S THE MOST
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*IT HAS 'SLAVES' . . . RINGS BELLS . . .
AND CONTROLS RECORDS BY THE THOUSAND!*

The Blick master clock gives unified and accurate control over all visual, audible and recorded time throughout even the largest premises, whether the mains are on or not.

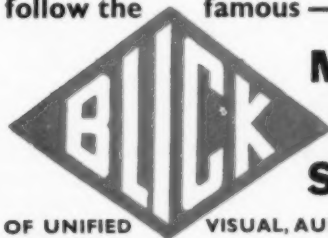
It is especially valuable because it controls an unlimited number of 'slave' clocks—wall dials—perfectly synchronised with the master; it regulates tea and other breaks by a custom-built programme of bells, klaxons, hooters etc.; and by means of one minute impulsing, when linked with time recorders and job costers, it avoids split-minute recordings which lead to argument and cause delay in wage computation.

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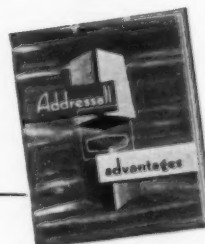
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ECONOMY

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Please let me have details of the items ticked,
without obligation

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BU 1258

Kalamazoo

SALES RECORDS

KALAMAZOO LTD . NORTHFIELD . BIRMINGHAM 31

DECEMBER, 1958

31

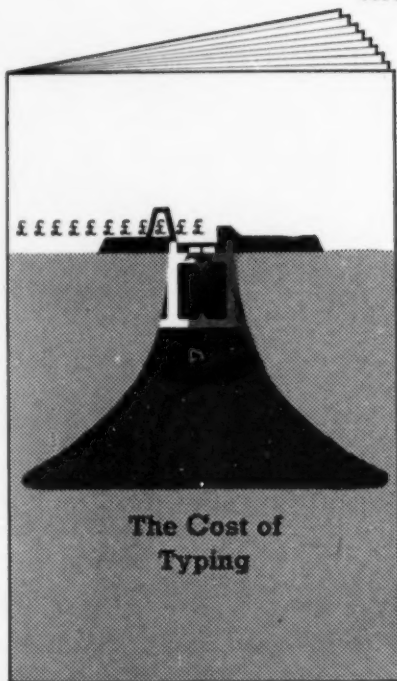
£978.10.7. a year for a copy typist!

Although costing investigations are commonplace in most forms of business today, little work seems to have been done on the productivity of *typing* departments. Certainly no serious work has yet been published on the subject. It would, for example, surprise most people to learn that the figure we quote in the headline is not so exceptional. Not when you take into account overheads, stationery, supplies and other costs. Indeed £978.10.7 is not the highest figure that has come to light in an investigation conducted by a leading firm of Management Consultants in this country, and now published in booklet form as "THE COST OF TYPING".

Apart from valuable case histories, you will find this report provides some highly practical suggestions for increasing your typing output. We strongly recommend that people in your firm should know about it. Ask your secretary to send for your copy.

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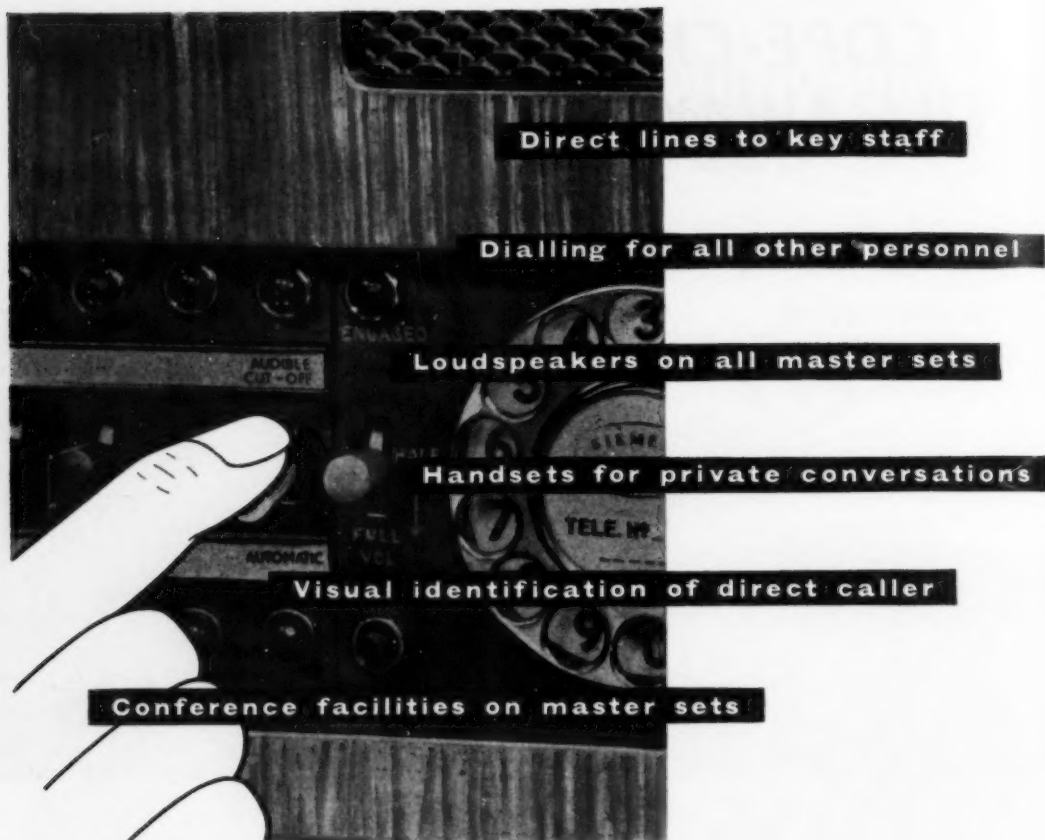
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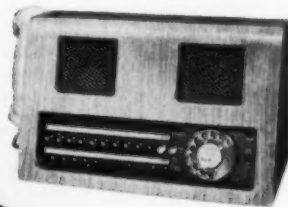
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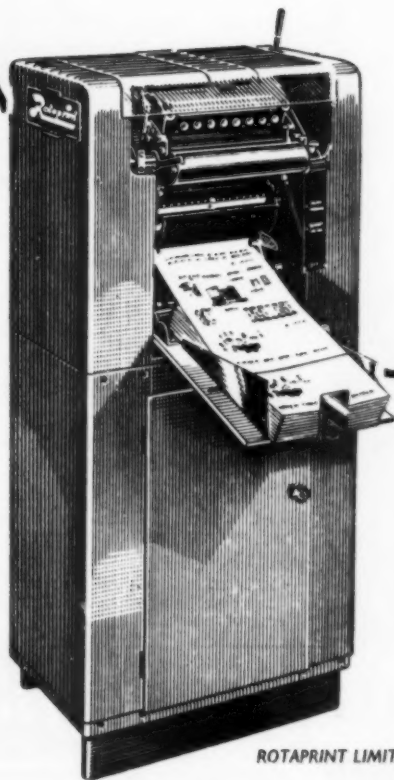
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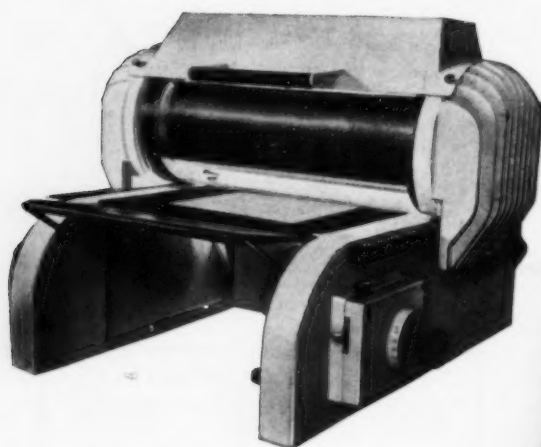
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Versatile 7

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Regd. Trade Mark

Kee Klamps exploit steel tubing with its constant strength in every direction. They form rigid joints between one tube length and another and simplify the building of every conceivable type of structure. Seven sizes to take tubing from $\frac{3}{8}$ " to 2" nominal bore give a wide choice of material.

Integral grub screws for quick fixing—no loose nuts and bolts, no sharp edges or dust collecting cavities.

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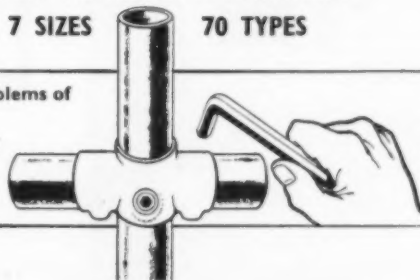
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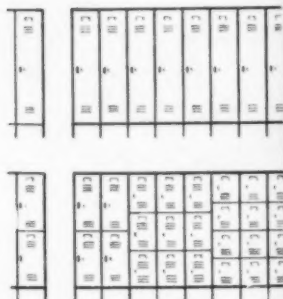
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DECEMBER, 1958



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Sellotape
REGD. TRADE MARK

**simplifies
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Hercules would not have lasted long if he hadn't. The Stymphalian birds here, with their brazen beaks and claws, presented a nasty problem. But he destroyed them by brandishing a metal rattle, and shooting them down with poisoned arrows as they soared in terror . . .

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PLUS 12/- P. TAX

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DECEMBER, 1958

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... just some of the ways that modern business makes use of 16 mm. film. Film has arrived—has proved itself to be infinitely more direct, powerful and *economic* than older methods of putting over ideas. In fact, film does the job with so much more impact, and at so little cost, that no up-to-date business, however small, can afford *not* to use its tremendous opportunities.

Rank Precision Industries offer this unique service to Industry:

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Think of the uses you can make of film in YOUR business. Send for information on how film can help you!

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BUSINESS



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Most of the cost of floor polishing and preservation is the cost of the labour involved. We find that one man can do the work of three since we switched to Sposs Floor Dressings.

Costs cut *By Two Thirds* with this **MODERN LIQUID** for all kinds of floors

WIDELY USED IN FACTORIES, OFFICES HOSPITALS, HOTELS, INSTITUTIONS,
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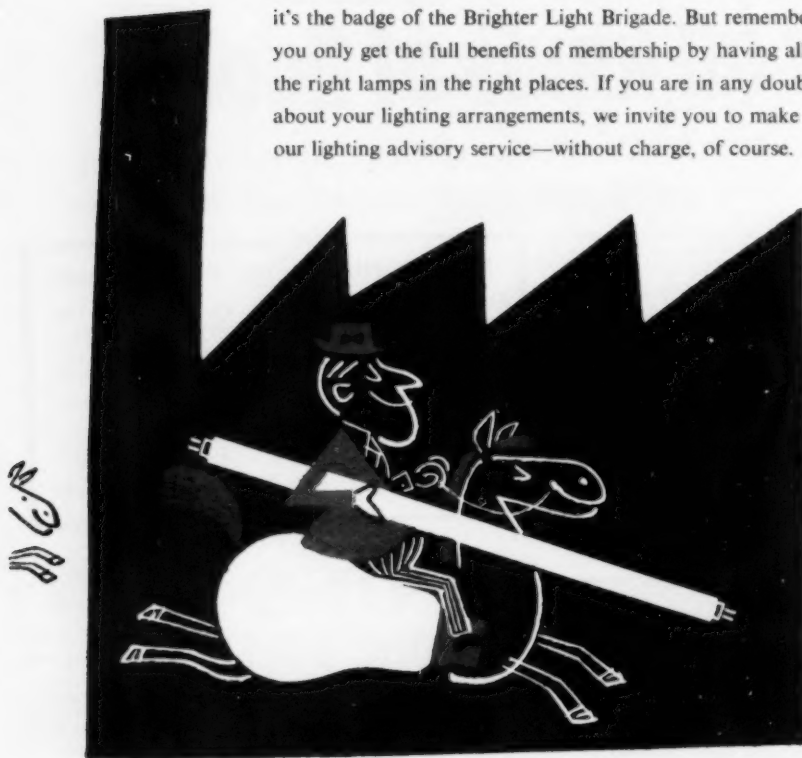
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YOU'D LIKE MORE INFORMATION? Ask your secretary to clip and post this coupon whilst the matter is fresh in your mind. Full details of SPOSS Floor Dressings will be sent in return. Write to us if you have any particular floor maintenance problems.


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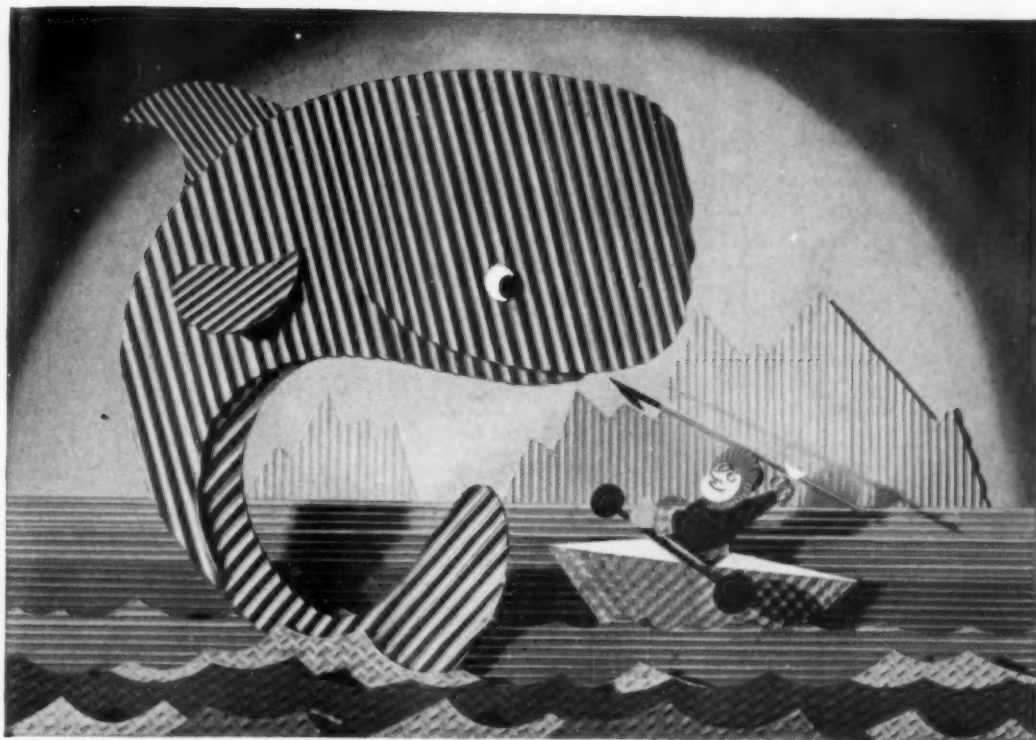


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Lamps and Lighting Division, 38/39, Upper Thames Street, London E.C.4 and branches. Tel: CENTRAL 2332

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BUSINESS



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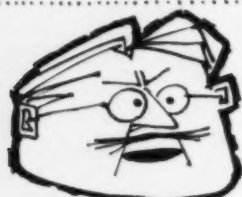




The talkative type
from the film "All I want is a Conference"



"Think I know what you mean" type
from the film "A Communications Primer"



"If they'd done it my way" type
from the film
"The Foreman Discovers Motion Study"



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Industry has its share of special problems—and problem people. In the long run, more time and money, temper and machinery are lost through a basic lack of understanding between management and workers, and among management personnel themselves, than through any other cause.

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8/12/58



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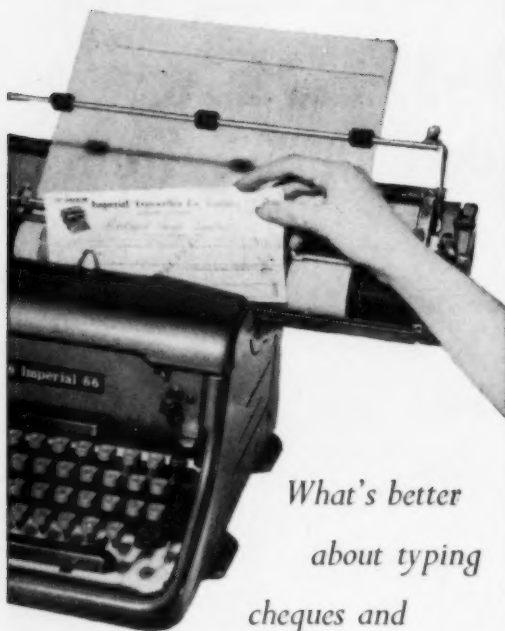
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Special Purpose Typewriters

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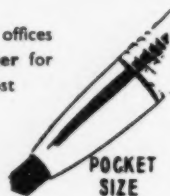
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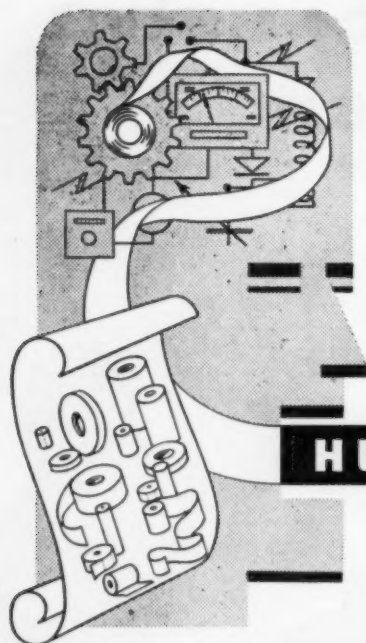
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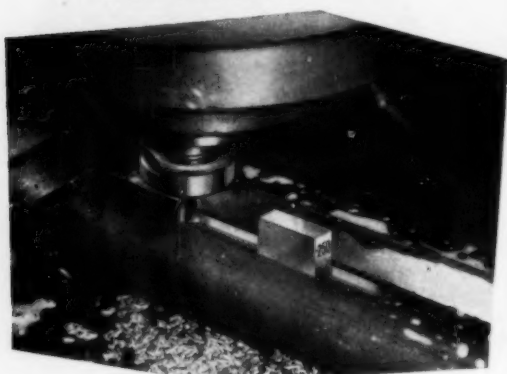
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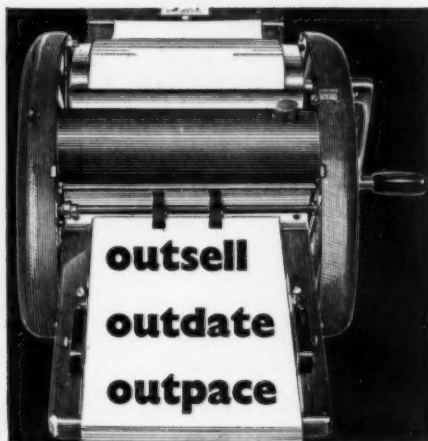
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DECEMBER, 1958



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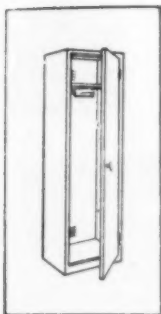
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FURNESS AREA OF LANCASHIRE

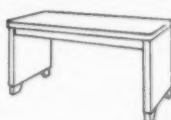
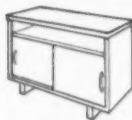
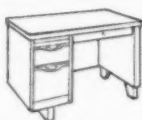
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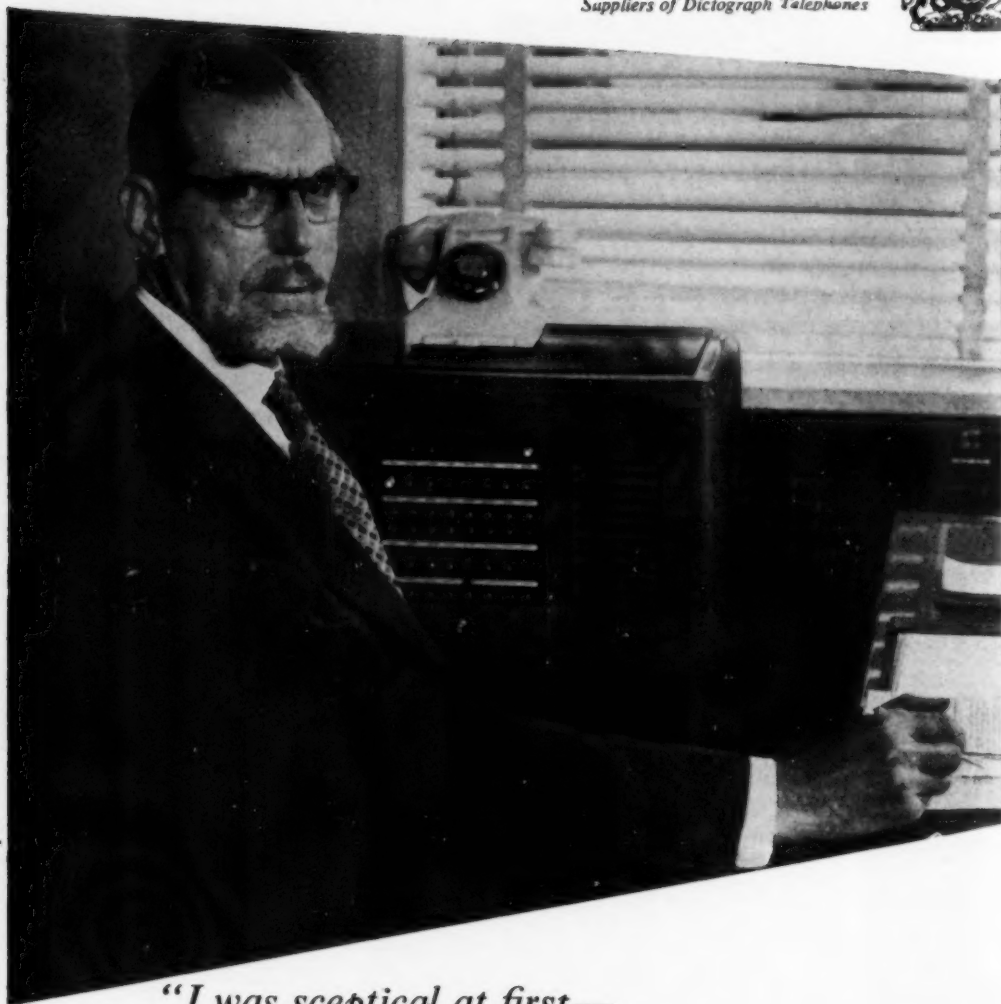
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Time and money would be saved if executives would observe the first principle of employee selection: study the vacancy before filling it. This kind of approach, I feel sure, would give a much clearer idea of the work that has to be done (and not what the executive thinks he wants), reveal what qualifications and aptitudes are essential, and probably make them assess more realistically the salary the job should command.

My own experience is that choosing secretaries, even for the chairman of the company, is best done by a personnel officer, because he has to find out what the job entails.

(MISS) CLARE SLOPER.
Gerrards Cross, Bucks.

Ulster springboard for Europe

Sir,

I read the article in your November issue about industrial opportunities in Northern Ireland just after I returned from a short visit there. I can confirm that all you say is true.

But you do not say enough. Anyone who goes there cannot fail to be impressed by the alacrity with which American companies are exploiting the advantages of

ready made factories and plentiful labour.

It seems to me that the Americans may be using Northern Ireland as a springboard for the European market. Unless British firms take heed they may find themselves beaten on their home ground.

JAMES RICHARDSON.
Wimbledon, Surrey.

Camels and committees

Sir,

I heard John Diebold, who while still in his twenties was dubbed 'the elder statesman of automation,' give an interesting talk on computers at a one-day conference arranged by the British Institute of Management.

Outlining some reasons why a number of computer installations in American industry and commerce had failed to 'deliver the goods,' Mr. Diebold said:

"A camel is an animal that looks as though it had been put together by a committee, and in the U.S.A. there have been too many computer camels." In other words, too many people thought they ought to have a say in how the computer should be used—hence a committee was formed.

We in Britain suffer from the same complaint, whether the subject be computers or canteen tea. I think, then, your journal would be doing management a great service if you got one of those indefatigable investigators of yours to find out the facts and present them in a

series of articles on When and When Not to Form a Committee.

One might on the other hand discover that the main value of committees was that they absorb the time and attention of people who might otherwise do untold harm to any business organization.

R. MITCHELL.
London, N.2.

Executives and their pleasures

Sir,

I am glad to see that *BUSINESS* is getting round to articles on things not strictly connected with work. Executives have their pleasures, too.

It was a change to read the November article on cars. It was informative without being technical. Motoring journals assume a familiarity with such terms as torque and b.h.p. that is not realistic.

Although I suppose the article was not meant to be comprehensive I did miss reference to a favourite model which definitely has an 'executive touch.'

I look forward to more supplements in a similar vein. They would add colour and interest to an excellent magazine.

B. FARRINGTON.
Nottingham.

Noise: enforce the law

Sir,

Why should offices have to spend so much money on insulation against street noise? The enforcement of laws on horns and motor-cycle exhausts would help tremendously.

Despite double glazing on all our windows we are continually beset by the noise of horns and furiously ridden motor-cycles.

BRIAN ROYDEN.
Newcastle upon Tyne.

OR

Big firms lead the field in the development of Operational Research methods. But small firms will certainly benefit.

New Research Into Business Problems

by Alan Collard

THE science of operational research is now expanding more rapidly than at any time during its short history.

Last year, nine new courses in OR were started at British universities and technical colleges, compared with 16 during the whole of the 1945-57 period. The Operational Research Society, formed as a club just after the war, now has 500 members and is growing at the rate of 25 per cent per year.

Commercial and industrial applications of OR are expanding too. Some firms have already set up OR departments. Others are keeping a watchful eye on developments—realizing that OR, having demonstrated its capabilities on certain

types of business problem, is now branching out in many directions.

The problems under attack at present are concerned with:

- Stock control.
- Production scheduling.
- Allocation of manufacturing resources.
- Transportation.
- Blending of materials.
- 'Queueing' problems.
- Automation.
- Competitive tendering.

Human relations problems are coming into the picture as well, including research into absenteeism, accident-proneness, and effects of organizational structure on the morale of employees.

Although most of this work is

being done in large organizations such as coal, steel and oil firms, railways and airlines, it sometimes produces 'ready-made' solutions which can also apply to small-firm problems.

For example, a large manufacturer wanted to make the most economical use of his transport fleet, both in collecting raw materials for processing and in delivering finished goods to customers. OR was able to suggest the best depots for the vehicles to work from, and the sequence in which deliveries should be made. The same method of getting a solution could be used by a smaller firm which wanted to know where to base its travellers, the sequence in which customers should be called on, and the frequency of calls.

Who are OR men?

The members of an OR department are recruited from various branches of science, chiefly mathematics, physics, sociology, philosophy, statistics, engineering and economics. They are chosen not so much for their specialized knowledge as for their training in logical, systematic thinking.

This is the key to their method of dealing with business problems. Although they often make use of information supplied by methods engineers, production planners, quality controllers, etc. they have the advantage of not being preoccupied with day-to-day organization.

After obtaining their data from existing records—or by collecting it

These are the basic OR tools

specially—they retire from the scene of operations and analyse it by statistical or mathematical methods. Then, using scientific laws borrowed or developed from other fields, they base an hypothesis on their analysis, test it, and use it to 'explain' the behaviour of their subject or to predict the results of following different courses of action.

Previous articles in *BUSINESS* (April and May 1957) have discussed the working relationship between OR men and management. Briefly, the former have no executive authority: their job is to *help* management to make decisions. Yet the information which they supply for this purpose is often so unambiguous that management is practically forced to consider issues and make decisions which might otherwise be 'ducked'.

Do the firm wish to keep old customers at all costs, or to risk losing some of them in the hope of gaining new ones? Are they after maximum output or maximum profit? Do they want to limit the size of their bid for a contract, or to keep production going even at a nominal loss?

These are the sort of policy matters which OR information may bring to a head.

OR in action

Here are some representative case histories which show how OR is now benefiting different types of firm.

Stock control. If a company hold too stocks their customers must wait. If they over-stock, they provide a

Operational research has shown that many problems have much in common, despite differences in the size or nature of the firm in which they arise. The solutions to these problems are therefore similar. For example, the hydraulics equation that tells an engineer what the volume of a dam must be to maintain a given outflow can also help a production manager to find the level of stocks needed for a given rate of output.

Simulation is a basic tool. OR men reduce a system to a mathematical equation, or a series of equations. Sometimes a computer works them out. Where each simulated situation is only one of many—perhaps even millions of possibilities—this means that management can predict results of various decisions that would previously have been prohibitively expensive to obtain, both in terms of money and of time.

Linear programming determines the best use of limited resources or capacity. A firm may have, say, six machines—all of different capacity and quality—with which to fulfil an order. The type of operation they perform is basically the same, therefore they have a *linear* relationship. Linear programming will evaluate the variables characterizing each machine and work out six individual production schedules accordingly to complete the order in the shortest possible time whilst making full use of the special features of each machine. Another example is that of minimizing freight costs by finding which of a company's several plants should supply a particular region.

Queueing theory (or waiting-line theory) helps to find the balance between the alternatives of Delay and No Delay; e.g. telephone calls seeking circuits, patients waiting to see a doctor, order forms awaiting processing.



Apparently diverse problems often have much in common. That is where OR helps. Queuing theory, for example, may be applied to blast furnace operations—and also to the processing of orders



level of service to customers which is prohibitively costly. At the same time, they must decide the most economic way of 'batching' their products.

One company, stocking about 3,000 items of packaging materials, had two problems. The first was that deliveries of raw materials were uncertain, ranging from five to ten weeks; the second was that the weekly consumption of each item varied considerably.

The difficulty lay in reconciling the level of stocks required to insure against running out with the maximum level of stocks laid down by the directors as economically desirable. Previously the firm had maintained sufficient for sales over a specified number of weeks. This had led to an over-concentration on 'essential' items, to the detriment of those which were used less often.

Operational research developed a computing routine which translated into definite quantities of stocks whatever level of protection was selected by the board. This was then reduced to a simple 'drill' for use by the company's clerks.

Production scheduling. A medium-

sized light engineering factory was making a wide range of products involving expensive capital equipment. Production was tied closely to demand, and the aim was to carry no stocks of finished goods. Resetting the heavy machines for new orders sometimes lost as much as a whole day's production. The study set out to design production scheduling and stock control methods which would ensure that:

- The firm's policy on service to customers would be carried out.
- Production would be scheduled accordingly.
- Production, within these terms of reference, would be scheduled at minimum cost.

Costs were found to arise chiefly from carrying finished stock and from losing production time during change-over.

A study determined the optimum batch sizes and produced methods of deciding, for each product, how often a batch ought to be made. At the same time a 'feed back control' rule was designed to stop the deviation of actual sales from forecast sales causing stock levels to move outside set limits.

This resulted in a production time saving worth £40,000 a year.

Allocation of resources. A company making animal feeding stuff mixes wanted to find a set of mixes which would cost the least—in terms of current prices—while satisfying the stipulated dietary requirements. A range of ingredients was available which contained different percentages of these requirements.

There were sufficient variables in this problem to justify using an electronic computer to solve it. In six minutes the machine found the answer which manual calculation would have taken about a fortnight to find. Where the trial and error methods previously used by the company had failed, the linear programming solution brought a saving of about 5 per cent—a considerable one in view of the large quantities of materials being handled. **Queuing problems.** The first such problems to be dealt with were concerned with finding the optimum capacity of telephone exchanges, to keep peak-period waiting time down to a predetermined value.

An engineering company manufacturing a variety of products



The electronic computer is opening up new fields for the OR worker. In the Operational Research Department of the British Iron and Steel Research Association, a Ferranti Pegasus is tackling a variety of problems

wanted to speed up their estimating procedure which was causing delays of up to several days. The OR team was asked to evolve a system for ensuring that no estimate remained in the department for more than four hours.

There were two estimators: one responsible for machining estimates, the other for foundry estimates. The work of the former suffered from wide fluctuations in the flow of requests. Also, the time which he took to handle different jobs varied more than in the case of the foundry estimator.

After applying queueing theory techniques the OR team recommended that two extra estimators should be on call for this section of the work. Now almost all requests are dealt with inside the four-hour limit. The only exceptions arise when a single customer makes an omnibus request for a group of estimates, but the relative infrequency with which this occurs makes a special system for dealing with it impracticable.

Automation. In certain processes, human operators are being replaced

by machines. OR can facilitate this changeover by studying the human element.

A study currently being carried out by the British Iron and Steel Research Association provides an excellent example of how far-reaching the organizational aspects of automation can be.

The development of a system of computerized orders was the original aim of an OR team sent by the Association to help a member over a chronic shortage of clerical labour in his expanded rolling mill order department. Their study shows that introduction of a computer would reduce the staff requirement from 220 to under 50.

To make the new office system work properly, information on progress in the works would have to be collected almost completely automatically. This in turn has led to an investigation into the flow of information along the production line. The line itself is about to be automated, so the office system must in any case await the completion of this process, since it would be senseless to render permanent a system which may not be the most efficient.

Coming developments

A number of new uses are being found for operational research. At present, a lot of effort seems to be concentrated in two vastly different fields: competitive bidding and human relations.

Competitive bidding may be for concessions, contracts, or licences to use a patent—or simply for the customer's money by the pricing of products or services. Different strategies can be adopted for different objectives. The most likely objective is to make the maximum total profit. Another is to gain at least a certain percentage of investment. A third is to minimize expected losses. A fourth is to minimize the profits of competitors, while a fifth may be to obtain a contract, even at a loss, to keep production going.

Operational research can help in such situations by determining, through the study of past data on estimates and actual costs, the degree to which actual costs tend to vary from the estimated ones. It can determine a firm's chances of winning by studying (from declared results) the 'bidding patterns' of potential competitors. If it is known precisely which competitors are going to bid, the probability of winning for a given bid is relatively easy to compute.

It is also possible to estimate the number of bidders by correlation to the size of the contract, whilst techniques are under development for organizing a firm's simultaneous bidding on several contracts at once.

Human relations problems may impose a drag on technological development. For example, if a business gets too large, it tends to become impersonal. OR is now approaching the point where it can determine the degree of impersonality by statistical means. On this basis it is thought that splitting such a firm into smaller units would improve efficiency by reintroducing a personal relationship between employer and employee.

END



Pieces of office furniture are
lathe or miller. If you retool

Functional Desks Speed Up Office Work

by Philip Marchand

THE office worker is a Cinderella so far as working tools are concerned.

Management rarely grudge expense on equipment for the production shop, where maximum output per man is essential. But even in firms that install complicated accounting and other equipment, little thought is given to the **basic tools** of the clerical worker.

Too often the attitude prevails that all a clerk requires is a chair and a table. Consequently work is not done as efficiently as it might be. True, O & M departments increase office efficiency by cutting unnecessary paperwork, improving forms, and planning better layouts, but not enough attention has been given to **work stations**.

This means studying the kind of desk, cabinets, etc., each office worker requires, and what he or she must have within easy reach—first, to save space where possible

and, second, to arrive at the best layout for continuous work.

Usually each category of office worker (secretary, typist, clerk, etc.) requires **specifically designed** office furniture. Some manufacturers knew this long ago. They offer special desks and tables for most types of office work. Yet it is still not widely appreciated that more attention to the individual needs of office staff can produce higher output and better work.

Comfort counts

Office staff who spend most of their time seated, obviously work better when they are comfortable. Working surfaces must be the correct height. It is of course difficult to specify heights for desks and chairs when people themselves differ so much in their proportions.

This is where the science of

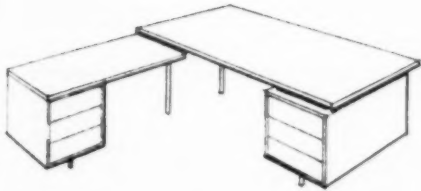
anthropometry helps. It establishes optimum measurements for equipment by analysing the proportions of a representative selection of the population.

The British Standards Institution is bringing out a standard on this subject later this month. Here are a few guiding principles:

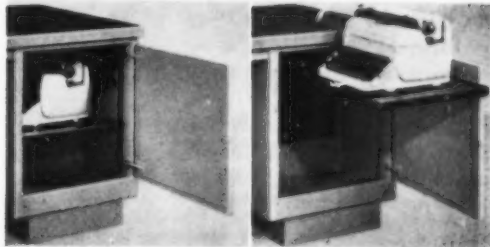
Seating. Chairs should always be adjustable for height and backrest. Posture seating has been known for over 30 years, yet many organizations still provide their office staffs, including their typists, with rigid four-legged chairs. The adjustable chair is important because different manufacturers build desks of differing heights, and because continuous work at, for example, a machine is much more fatiguing without a backrest fitting into the small of the back to give an upright position.

Feet should always be firmly on

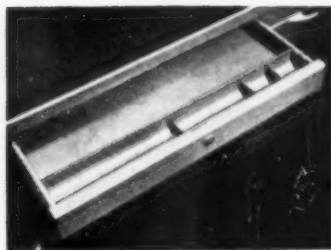
'tools' just as much as the engineer's
wisely you get more output



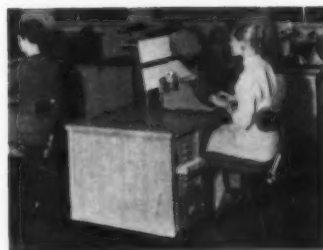
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WORK STATIONS FOR SECRETARIES AND TYPISTS

Superficially, a secretary or typist needs only a typewriter, a chair and a table. However, the modern trend is to establish self-contained 'work stations.' Secretaries can be provided with L-shaped desks (1) or with desks fitted with a retracting typewriter platform which swings back into the pedestal when the typewriter is not required (2).

Attention to details can also speed up work. For example, files at right-angles to the drawer are easier to locate, and a tray for clips, papers, etc., help the typist to find what she wants immediately (3).

Typist's desk (4) designed by Marks & Spencer is 28in. high and has metal drawers for stationery. Typist reads her copy over her machine with the aid of a foot-controlled line-finding device.

the floor, with the knees bent at slightly less than right angles. Consequently chairs will normally have to be set at 16in. to 18in. from the ground.

Desks and Tables. There should be plenty of knee-space under the desk, so knee-hole drawers should either be avoided or very shallow. Opinions vary a little as to what is the best height for desks and tables. Manufacturers' heights vary between 28in. and 30½in. Some manufacturers offer optional heights. A typist's desk or typing platform should be about 26in. high, and never over 28in., as the machine's keys are always at least 2in. above desk surface.

Special designs

But correct dimensions are only half the story. Every desk or work station should be designed for what is done there.

Some big firms believe that the answer lies in the use of custom-built units.

Marks and Spencer Ltd. and **I.C.I.** are examples. Both have designed office furniture for office staffs throughout their organizations.

For instance, **I.C.I.** have developed a prototype secretarial desk with a curving top that gives a secretary clear desk space not only in front but also on her left side. A right-hand pedestal is fitted with drawers and a stationery cabinet on her left is set at angle to the knee-space for easy access. The desk is further extended on the left by a permanent typewriter platform, which is set at a slightly lower height than the desk's surface. Thus the keys of the typewriter come up to the level of the desk, and the secretary keeps 'on top' of her work.

One of **I.C.I.**'s typists' desks which has already been used in the company's offices is the result of work study and anthropometric investigations. As with **I.C.I.**'s prototype secretarial desk, the



5



6

SPECIAL-PURPOSE DESKS

The exact needs of clerks and specialized office staff should be assessed carefully before buying furniture for them. Ideally, the approach should be that of the method study expert.

Some firms design their own furniture. Marks and Spencer have done this in their mailing department and for their sorters. A post clerk (5) sits at a desk with two open filing compartments which contain correspondence and another compartment containing envelopes. The clerk has the job of putting letters into envelopes, and this desk's layout ensures that she does this with a minimum of movement.

Another desk (6) designed by Marks and Spencer enables a clerk sitting at a horseshoe desk to sort at high speed invoices into several piles. The girl uses both hands to place invoices to her left and right, and in front of her.

Not all organizations can design their own furniture. But office furniture manufacturers are becoming more and more conscious of the need for specialized desks, and an inspection of their catalogues can often suggest new methods of tackling clerical work.

One development is a card-filing desk (7) which holds between 5,000 and 12,000 cards (the number depends on the size of the card used) in a wheel fitted inside a desk. An opening in the top gives access to the cards, and the wheel is easily pushed round for rapid card selection.

A variation on the mobile desk (8) is an open-access filing desk. Suspended files fit flush with the desk's surface, and will even take the weight of a machine.

Mobile filing desk (9) was developed for a company within the Unilever group. When the trolley drawers are pulled out, a clerk has files to her left and right; if necessary, the drawers can be exchanged for others when switching over to new work.

stationery cabinet of this desk is set at an angle to the knee-hole space. The desk is made up from three detachable sections: a small table with a drawer, a wedge-shaped section, and the stationery cabinet which has a rolling door of slatted sections. When fitted together the sections give a uniform working surface shaped like a shallow V. The typist has easy access to her stationery and the desk can be assembled for copy-reading from the left or right. An additional feature of this assembled desk is that by adding an extra section

stationery cabinet at what then appears to be one desk.

Although the angled desk has certain advantages, manufacturers still prefer to produce rectangular-shaped desks for typists, as in large 'open' offices space is often saved by marrying up batteries of desks.

Where to get them

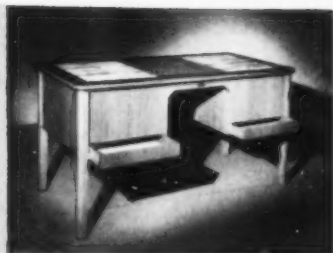
Names and addresses of suppliers of equipment discussed on these pages will be sent on request. Apply to

BUSINESS

Mercury House, Waterloo Road, London, S.E.1



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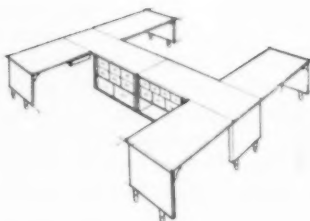
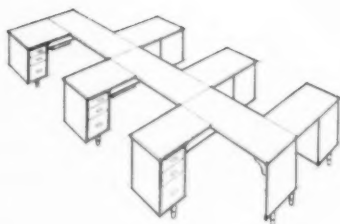
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WORK FLOW FURNITURE

Office work is often split up into processes so that each employee has a specialized job which is only one stage in, say, controlling stock or meeting orders. Their work stations are 'linked' with tables to enable paper work to flow easily from desk to desk without any movement of persons.

Several manufacturers produce linking tables that can be used in conjunction with their desks. Many have contracting departments who co-operate with office managers and O and M departments in the development of efficient office layouts.

One firm of manufacturers sell their furniture almost exclusively as systems for doing office work on flowline principles. Each desk on the 'line' can be fitted with drawers, cabinets, etc., as required, and the desks can be of typewriter height if necessary. This system of unit-construction usually saves space, since all the office worker needs is built in around him.



THE EXECUTIVE'S DESK

Managers and other executives usually like large desks. But deep desks are useful only when the executive holds conferences round his desk—then an overhanging top enables others to sit at the desk and spread papers.

More working space results if telephones and dictating machines can be kept off the working surface. Most manufacturers' catalogues feature small tables for these accessories, which can be placed on the executive's left-hand side. Alternatively, he can adopt an L-shaped desk which serves much the same purpose as the desk-cum-table arrangement, and usually gives additional cabinet space.



How a no-machining process
is finding new uses in many
different industries

Powder Metal Parts

by Terry Coram

POWDER metallurgy is a reversal of the normal conception of metal-working.

Conventionally, components are cut from bar or rod, or cast or forged; then they go through various machining operations. But with powder metallurgy, parts are **built up**; machining is eliminated or cut to a minimum.

The process bears a rough similarity to baking. Metal powders (the 'dough') are **mixed**; then they are **compacted** in a press into the exact shapes required; and then they are baked or **sintered** in an oven to give them strength.

So the content of components can be tailored exactly to suit the job they have to do; this is done simply by adding various metal powders or lubricants at the mixing stage.

That is why powder metallurgy is rivalling more conventional methods in the production of a wide range of components. At the beginning of the last war only very small pieces were manufactured. Since then the range of sintered products have grown enormously and is steadily extending. Examples are parts for business machines, electric motors, diesel engines, agricultural machinery, laundry equipment and conveyors.

Today, many household appliances have sintered components.

Every car has over 40. And in the U.S., iron powder consumption has multiplied more than fivefold in eight years.

There are good reasons for this expansion. Less capital and manpower are needed. Material is saved. Unusual alloy combinations with new properties are possible. Production is faster. The product is often cheaper and better.

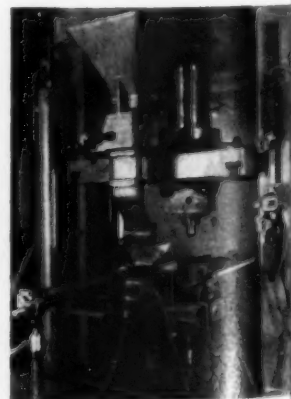
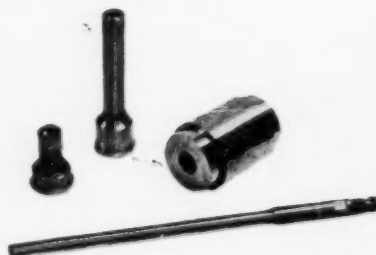
It is one of the easiest ways to process hard metals. With softer metals it competes with casting methods.

The powder. Usually the metal is supplied in powder form—iron

from Sweden and Canada, other metals from home sources. Some firms manufacture their own by pulverization or atomization.

Advantages

Economy. Although the cost of the powder is high, the process leaves no waste which must be specially treated before re-use. Many features of casting represent wastage—scrap, slag, blowholes, etc. All are absent in powder metallurgy. Furthermore, strength is usually the same or greater, while density, and consequently weight, is substantially less. For



BUSINESS

ts Are Better, Cheaper

instance, with oil-pump gears, the high percentage of scrap is saved; they have the full strength of cast iron ones but only three-quarters of their weight.

Subsequent machining may be necessary for awkward shapes, but this may still be cheaper. Slotted iron-copper pistons, as originally produced from powder metal, required the drilling of six holes. Even then it was still cheaper to produce a sintering than to make a part from cast iron. Now, the holes are being replaced by slots, the drilling eliminated, and costs even further reduced.

Often, casting a part is much

From powder to part—in 2 stages

The powders are mixed in small barrels. To assist compression and to prevent undue wear of the die, a solid lubricant is added.

STAGE 1

The powder is compacted in a die set up on a press. The only tools required are those on the extreme left. As a hopper containing the mixture passes over the die, one tool moves downward, taking an exact volume of powder with it. The top punch enters the die, and both tools compact the powder into the right shape.

The 'briquette' that emerges is strong enough to be handled.

STAGE 2

Sintering is done in a furnace at temperatures of up to 2,100deg. F., but at no time is the metal fully melted. A controlled atmosphere ensures that the metal is not contaminated. Time and temperature are also carefully controlled.

The components produced are clean and bright but a slight change in size is unavoidable. Allowance can be made for this in designing the dies, but where close tolerances are required, the parts may have to be again pressed or sized to correct distortions.

[Pictures by courtesy of Sintered Products Ltd.]



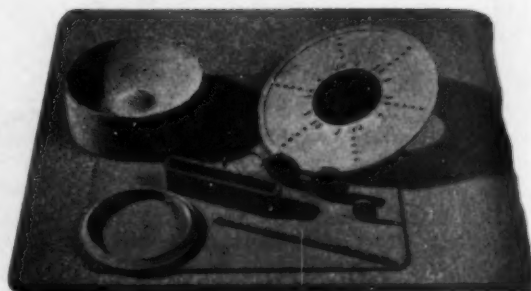
Where powder parts score

LIGHTER by 20 per cent and less noisy, sintered oil-pump gears score over cast iron pieces.

MORE OIL is held in sintered steel piston rings owing to porous texture. They also weigh less, and last longer.

POROSITY of sinterings also makes them efficient filters for diffusing gases, filtering fuel-oil, separating liquids.

FRICTION PROPERTIES make sinterings important for clutch plates. Facing thicknesses vary from .005in. to $\frac{1}{4}$ in.



more difficult than compacting and sintering. The piece is then much cheaper.

Speed. Production time is cut. Output of a brass rotor that was formerly made by machining, has accelerated to 1,000 per hour per set of tools and costs have been lowered by 25 to 40 per cent.

Complicated shapes are pressed in one operation. A simple sizing operation brings the piece within very close tolerances.

It is often possible to produce complicated shapes within weeks, whereas normal tooling takes appreciably longer. Once die and punch are set up large scale production to accurate limits is quickly maintained. Rate of production depends on the size of the part, but it is not unusual to press

1,200 pieces per hour from one press.

Only infrequent spot inspection of parts is necessary. Part-to-part similarity is largely due to the widespread use of carbide dies, which have a life of millions of pressings on plain shapes.

New alloys. Many alloys which are impossible to obtain by normal casting methods, can be easily mixed in powder form and sintered. For example, silver and nickel do not mix when melted due to the separation of the two metals. When powdered, an alloy can be produced which combines the advantages of both—ideal for electrical contacts.

Again, copper and tin together produce a porous bronze which can be impregnated with oil and used for self-lubricating bearings.

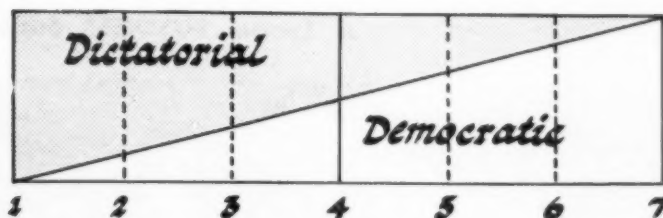
All this is possible because at no time during sintering is the metal completely molten.

Durability. Improved wear resistance is obtained from materials that can be oil-impregnated. Certain alloys are steam treated. This increases resistance to wear and scuffing, making them ideal for car pistons.

Control of composition. The product's purity is easily controlled. An enclosed atmosphere ensures freedom from contamination. And the powder metals are purer than cast metals in the first place.

Non-metals. With powder alloys non-metallic substances can be introduced to give special characteristics. Graphite with copper goes to make motor and dynamo

Continued on page 118



You probably think you are a natural 'leader of men,'
but dictatorial methods may be costing you money.

How Democratic Are You?

MANY businessmen wish there were a foolproof way of dealing with subordinates. Unfortunately, there isn't. But the leader in industry can be told about some of the 'techniques' of leadership that have been proved successful (or unsuccessful) in different circumstances.

For some this touches a sore point. The businessman likes to think of himself as a good boss. Too often people say, "Oh, any intelligent person can control staff," or "Anybody can give orders." This misses the point. Any literate person can write and speak, but few have the ability to express fluently what they really mean.

American businessmen are inclined to believe that psychologists can help them develop the somewhat elusive qualities of leadership. That is why they queue up for week-end courses in leadership put on by universities. At a recent B.I.M. conference in London, Professor R. Tannenbaum, of the University College of Los

Angeles, described how the 'students' learn not only how to give orders but also how to get the best from subordinates in other ways.

Good leadership means democracy—but this, as Prof. Tannenbaum emphasized, must not be overdone. Indecision wastes the talent of staff just as much as rigid dictatorship does.

Where do you fit in the diagram? The shaded area represents management's authority. The numbered cross-sections show the proportion of it exercised.

1—If you are here, you are a complete dictator. You announce a decision that you have already made. You're the boss. What you say goes—and so does anyone who disagrees.

2—You 'sell' your decision. You have already made it, but, rather than announce it as an order, you try to whip up some enthusiasm among those who must carry it out. Results are better, but could be improved.

3—You invite questions as you

present your decision. They are unlikely to change your mind, but it gives your subordinates some small sense of participation. They feel responsible—and their work shows it.

4—At the half-way stage you present a tentative decision which is subject to change. Participation is on a 50-50 basis. You invite ideas. The decision is yours, but it is clear to your employees that they have helped. This is good leadership.

5—You pose a problem and ask for ideas on its solution. The decision is up to the group. You probably act as chairman to a general discussion. Still good—if you have the right staff.

6—You define the limits of the decision and subordinates are free to make up their own minds within these limits. Unless you have exceptional staff, this is carrying delegation too far.

7—You might as well not be around. Your subordinates define the limits and make the decision. Leadership is absent and your staff become apathetic.

END

DIRECTORS ARE PILOTS.—Pasolds, Langley.

Bucks, exporters of £500,000 worth of children's wear to over 65 countries each year, were probably one of the first British firms to recognize the importance of executive aircraft. They have used a variety of types for business purposes since 1937. The Fairchild Argus, Percival Proctor, Miles Gemini and now the Miles Aries—all have done service with Pasolds. No professional pilot is needed as two of the directors as well as the sales manager have flying experience.



Executive Aircraft Pay Their Way

Firms large and small find that aircraft are playing an increasingly important role in business. Their planes are tools of management—not expensive, tax-evading luxuries.

TIME-SAVING—With a company plane, no time is wasted waiting at airports or driving to destinations beyond terminals.

SAFETY—Today, prejudice against small aircraft due to fear of difficulties in bad weather is largely unfounded. A variety of radio navigational aids are available at moderate cost, and many firms are operating aircraft at something like 99 per cent. regularity.

As a legacy of the war, hundreds of airstrips dot the face of the British Isles. Some have been acquired by companies. Many others are available for use.

TYPES AND PRICES—Suitable types range from the small, single engined, 2-4 seater with a range of several hundred miles and a speed of about 100 m.p.h., to the large luxury aircraft with two or four engines, a range of over 1,000 miles, a speed of up to 300 m.p.h., and accommodation for a score of people. Prices are from £2,000 to about £45,000.

Company aircraft need not always be used for business purposes. Some firms allow executives to charter company aircraft for weekend trips at reduced rates, the principle being that as long as an aircraft is owned it may as well be used as much as possible.

OPERATION—An example of aircraft utilization and operating cost is Ind Coope's De Havilland Dove which was used on 119 of its first 130 working days (including maintenance). During this time 384 journeys were made and 568 passengers carried.

Current operating costs, without depreciation and assuming 600 hours flying a year, are approximately 2s. 10d. per aircraft-mile. As the Dove carries an average of 2½ passengers per trip, cost per passenger mile is 1s.

REGULAR TRIPS ABROAD.—C. A. Parsons & Co., Newcastle, engineers, were one of the first to operate a De Havilland Dove for business purposes. Used for regular flights abroad, the Dove is operated in conjunction with A. Reyrolle & Co., an associated company, and flown by a professional crew of two. Though primarily for the transport of the directors of both firms, senior staff also travel by air when seats are available. All are enthusiastic about the aircraft and regard it as an essential aid to business



CENTRAL BOOKING DEPOT.—Ferranti, who already operate several executive aircraft, recently took delivery of a four-engined De Havilland Heron. To deal with the demand for the aircraft, there is a central booking organization. Thus the aircraft operate, on average, three-quarters full. Ferranti have used a Dove since 1954. It rapidly proved its value in liaison flights between the company's factories and the Ministry of Supply and Service establishments. Now the Heron flies regularly between the main Ferranti factories at Edinburgh, Manchester and London. Like the Dove, it is maintained entirely by the company's own ground crew. The air crew comprises two pilots and a radio navigator

A Special BUSINESS Supplement

LIAISON WITH CUSTOMERS.—Dunlop Rubber Co. have to maintain constant liaison with aircraft and aircraft equipment manufacturers, so their aircraft makes frequent calls at airfields throughout Europe. In addition, visits to Service and manufacturers' airfields all over the country are the daily rule. Operated by the firm's aviation division, their four-seater Auster Autocar is piloted by members of Dunlop's technical and sales staff. The advantages of air travel have led them to consider the purchase of a larger aircraft



VISITS TO SCATTERED FACTORIES.—Fox's Glacier Mints have their headquarters in Leicester, other factories in Ireland, and depots scattered around the U.K. During the eight years it has been in operation their executive aircraft has proved indispensable.

This is because the company, essentially a family business, set great store on maintaining close personal contact with factories, depots and representatives.

Fox's acquired their first aircraft—a De Havilland Dragon Rapide—in 1950. Today it serves as a stand-by for their more recently purchased Dove.

The Dove's comprehensive radio equipment ensures that service is regular and reliable. Flight time—increasing steadily—is some 400 hours per year. Belfast is visited at least twice a week, and the directors believe that without the Dove's mobility they could not operate their factory there with anything like its present efficiency. Despite good rail connection, regular flights are made to London.

DEMONSTRATIONS ABROAD.—Lec Refrigeration operate an Anson aircraft from their own grass airfield adjacent to their Bognor Regis factory. The Anson, which has recently replaced a Gemini aircraft, is a flying showroom as well as a means of executive transport. It enables demonstrations of the company's products to be taken to the doorsteps of customers throughout Europe, and even Africa. Last year 36 different countries were visited in a total of 32,000 miles of flying. Lec's pilot is on the export staff and is a refrigeration engineer. His ability to advise overseas customers on technical problems makes it unnecessary to carry a staff of specialists on overseas tours. The Anson's home is the 1,000-yard airstrip alongside the factory. The company plan to purchase a larger aircraft in the near future



3s. A MILE.—Ind Coope and Allsopp, Burton-on-Trent, operate a twin-engined De Havilland Dove. Before 1957 they used a Rapide which, in its first year of operation, logged 650 flying hours and a passenger mileage of 120,000. Owing to increasing need for director and executive mobility, Ind Coope have just acquired their own airfields in Derbyshire. Current operating costs amount to between 2s. and 3s. per aircraft mile. Higher cruising speed, longer range—fewer landings at £2 14s. a time—de-icing equipment and up-to-date radio have made the Dove indispensable for regular visits to subsidiaries and 5,000 hotels, inns and public houses. The company employ a professional pilot and a licensed engineer



MANY USES.—Automobile Association's De Havilland Rapide based at Fairoaks Airfield, Surrey, is used for a variety of tasks including executive travel, inter-office communications and traffic-spotting. The Rapide has recently replaced a smaller Auster aircraft, and is maintained under contract by an engineering firm at Croydon Airport. Two members of the A.A. staff fly the aircraft

This is the second of a series of supplements on "The Executive Life." Last month's dealt with cars. Next month's will feature powered boats.



If the employees' interest is continually 'recharged,' joint consultation is neither a time-waster nor a clearing-house for complaints



JOINT CONSULTATION

How to Keep it in Top Gear

by **C. L. Anderson**, Liaison Officer,
Tate & Lyle Ltd., Thames Refinery

WHAT do we mean by joint consultation? It ranges from a meeting of two or three people to discuss a common problem, to a complexity of committees and sub-committees with mandatory powers.

The 'two sides of the table' complex inhibits free discussion. While it is right that there should be divergence of opinion, there cannot be predetermined sides—otherwise the table is relegated to a bargaining counter.

Nor should it be a 'complaints department.' While a complaint might be a legitimate subject to introduce as a matter of common interest, its cause *should* have been removed by good management and good foremanship. Joint consultation is not a panacea.

Thames Refinery, one of the

three main refineries of Tate & Lyle Ltd., introduced joint consultation nearly 12 years ago in the form of the Thames Refinery Council. The organization consists of a main council and nine group committees. Although the council is the highest authority, it is intimately linked with the group committees; neither can exist without the other.

The Refinery employs some 2,900 people, divided into groups representing sections of common interest. There are, for instance, a Foremen's Group, a Process Group and an Engineers' Group. Each is represented by a committee consisting partly of elected representatives and partly of management appointed representatives.

By the rules of the constitution, the number of management

appointed representatives does not exceed the number of elected representatives, nor is it less than one-third. The election of the representatives is carried out by secret ballot and the managing director, or his delegate, appoints a chairman of each group committee. The committees meet regularly once a month. Each group committee is given, according to its numerical strength, a certain number of places on the Refinery Council, which are filled by representatives elected from and by that committee. These representatives, together with the chairmen of group committees, comprise the Refinery Council, which meets once every two months under the chairmanship of the managing director.

Matters discussed by committees



Each group of workers is represented by a committee consisting partly of elected members and partly of appointed members

or by the Council cover a wide range, including Refinery policy, efficiency, working conditions, accident prevention, and interpretation of rules and regulations, to name but a few. The Council may discuss matters referred to it by group committees, or it may introduce fresh subjects on its agenda. It may also refer matters back to group committees for further discussion.

The only subjects barred from all group committees and the Council are those which come within the province of the Trade Union. Shop stewards may be (and in many cases are) members of group committees and the Council, but they are there as elected representatives of their groups and not as union officials.

The Council has three sub-committees dealing with benevolence, safety and savings. Their members are appointed by the Council, and make regular reports to the Council on their transactions.

Interest or apathy?

The following observations on the problems of maintaining employee interest, and the suggested solutions, are based upon experience at Thames Refinery.

Other firms will have found other remedies equally effective. The only yardstick is the question: Does it work?

Initially, there is no problem: there must have been some support to launch the J.C. organization and this must have come from all levels.

Reactions vary. Some regard it (fallaciously) as the be-all and end-all of industrial problems; others regard it with suspicion. Whatever the feeling, the interest is there, to remain until the novelty has worn off.

This initial period is perhaps the most important. The venture must be established as a real and virile organization.

Good chairmanship helps. Nevertheless the problem of maintaining interest is a real one. In the best of consultative organizations apathy may set in, and it often seems that the better the relations generally, the greater is this danger. If the thing is running smoothly with a contented electorate, there is the tendency to sit back and leave well alone. The result is a sterile organization, punctuated by a series of dull routine meetings.

Much can be done to combat apathy. First and foremost, new

blood must be infused periodically. This can be accomplished satisfactorily only if there is a definite term to the life of the Council. At the end of this period it must be dissolved and re-formed by fresh elections.

The term of office can vary. Some constitutions provide for a number of representatives to retire annually. Thames Refinery Council runs for a full two years before being dissolved completely. While new faces appear at the Council table, inevitably some of the old members are re-elected, so continuity is not entirely broken.

Achievements

This 'shake-up' occurs only at stated intervals, but interest must be sustained during the life of the Council. It is very necessary therefore, for the Council to achieve something concrete at least once during its session. This may be the introduction of a new method of work, the design of a new product, or an employee service—in fact, anything which would affect all and sundry.

It may be argued that the Council cannot go on 'laying eggs' year after year—but regular stock-taking need not apply only to the work in progress. The pension scheme may require revision, the training methods may become outmoded. In a progressive undertaking conditions are constantly changing. Much of the old can be renewed or scrapped altogether. Even the Council constitution requires periodical revision.

Maintaining interest

To maintain interest the meetings must be informative. But the traffic

continued on page 114

Mechanized Warehouse

A new £700,000 palletized warehouse, with an automatic trolley conveyor system, is enabling Boots Pure Drug Co., Nottingham, to speed up deliveries to their 1,300 branches throughout the country.

The warehouse handles 60,000 different lines, and has a total annual output of 25,000 tons. Every day between 120 and 180 branches send in orders. Handling equipment includes thousands of wooden stillages and 'nestable' trays. An Emidec computer, to be installed next year, will keep an inventory of all lines and streamline branch ordering.



INCOMING GOODS, if not already on stillages, are unloaded straight from vehicles on to stillages and moved by hydraulically operated lifting trucks. Unloading times are cut from three hours to half an hour



STILLAGES ARE STACKED. A battery-operated lift-truck cuts handling to a minimum. Some items are kept in bins which are fed from the reserve stock areas by truck. There are between 15,000 and 20,000 stillages in use

ORDERS FOR BRANCHES are assembled as unit loads from the stock bins (left) into nestable trays, and spot-checked. Developed by the warehouse staff, the trays are plywood with sloping sides and a detachable lid. There are between 160,000 and 175,000 in use. (Each costs 13s.) When empty, they are 'nested,' 12 trays taking the space formerly occupied by one case. The trays are passed to the packer who stacks the completed order on a trolley (right). The trolley is hitched to the overhead 'Dragline'



Handles 60,000 Lines



THIS 'DRAGLINE' (the pin which engages the mast) is shown in detail above) automatically tows the trolleys from the assembly points to the lifts. These 'Drag-lines,' each of which is 500ft. long, cost £10,000 per floor, and are essential in handling the volume of goods at seasonal peaks. Up to 10,000 containers are dispatched a week



FOUR LIFTS, of three-ton capacity and a speed of 150ft. per minute, discharge directly on to the dispatch area. At the lifts the trucks are released from the dragline and the documents sorted. Order forms are in triplicate. They become the invoices for charging the branches, the delivery notes and filing copies for the warehouse. The branch copies go into polythene bags together with new order blanks for the next order. The standard printed order form covers major lines grouped in storage sequence

THE DISPATCH AREA accommodates 18 vehicles. Battery-operated lift-trucks run straight on to them to stack the loads. They then go to the Beeston factory for dispatch. Although the stillages mean a loss of trailer space, this is more than offset by faster handling. Boots prefer road delivery—70 per cent of deliveries to branches are by road. Some 40 lorries are loaded each night. Half are owned by Boots and the rest by contractors who do most of the longer journeys



Putting all workers on a staff basis builds morale and cuts clerical drudgery. They get a sense of pride in themselves—and in their work.

This Firm Pay All Employees by Cheque

by William Guthrie

THERE are no wage packets at Texas Instruments Ltd., Bedford, makers of semi-conductors (transistors and other devices). All employees receive monthly salaries through the bank.

The system works smoothly and gives several advantages. There are none of the objections so often associated with other unorthodox forms of payment—caused, for example, by shopkeepers having to cash cheques, or staff running short of change. The employees do not mind—in fact, they like it.

How it started

Although Texas Instruments are owned by an American firm of the same name, they were not influenced as much by American practice as by commonsense.

Before Texas Instruments started production last year the managing director, Dudley Seward, realized that the factory, then a pilot project, needed employees of better calibre than usual.

This need was dictated by the nature of the work. Semi-conductor production involves,

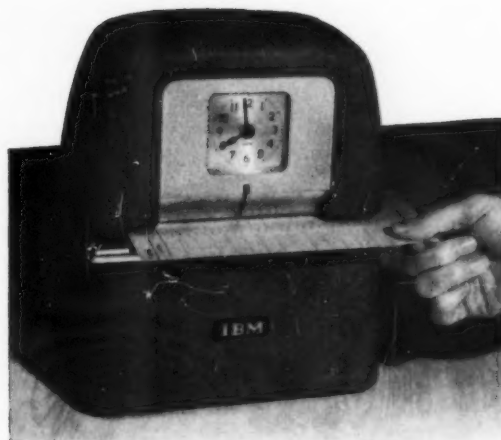
from beginning to end, a series of laboratory-type operations, in which delicate equipment is used with unusual dexterity. Even with the greatest care, there can still be many rejects in all semi-conductor production. The nature of the work means that quality depends to a large extent on the care and responsibility of the individual. Texas Instruments knew from the outset just the type of employee they wanted. They required young women whose intelligence and aptitudes would not normally make them look for a career in a factory.

How the system works

The working conditions have been arranged specifically to attract the right type of girl. These are the main features:

Monthly salaries replace wages.

A contract guarantees a minimum



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of one month's notice on either side.

Time clocks are barred. Every employee is put on trust.

There are such additional benefits as substantial insurance cover, non-contributory pensions and special sickness benefits to supplement National Insurance. Every employee is made to feel that she is part of the team and that the team will look after her.

The company started off simply by assuming that every employee would like to be paid monthly through a bank. They were right—so far, none has objected to it. The very fact that payment is made in this way has started rumours in Bedford that Texas pay inordinately high rates—but this is not so.

No employee has ever resented being asked to sign a contract. Rather do they appreciate the measure of security it gives. There are no complaints about bank charges.

Payment is made on the last day of the month. The position is explained to every employee at the interview. If the individual, on commencing employment, runs into temporary financial difficulty the company are willing to make an advance to tide him or her over. In fact, no one has ever taken advantage of this facility.

Where the employees do not have bank accounts, Texas help them to open one. Choice of bank is a matter for the employee alone, but Texas give advice and also a reference.

Several days before the end of the month the accounts department send to their bank a list of all salaries together with the names of employees and their banks. Before the end of the month the bank has completed the distribution.

Advantages

The accounts department consists of only five persons. Making up the 'payroll' takes only two persons two or three days per month. At present there are about 180



Responsibility for quality rests largely with the individual. So Texas set out to attract girls whose qualities would not normally make them look for factory work

employees, compared with about 50 a year ago. Soon there will be a big increase in numbers and all the work will be transferred to accounting machines.

Absence of time clocks means there are no cards to check, or different rates to compute. Over-time is calculated as a percentage of normal time.

There are no bonus or 'piece' rates because these are considered unsuitable for this type of work. The emphasis is constantly on quality rather than on quantity. In place of normal incentives like bonuses, Texas Instruments rely on creating the team spirit. The policy succeeds. No one, they say, has ever let the team down.

Because there is no need to calculate pay, by far the greater amount of the accounts department's time is spent on sales, purchases and forward budgeting—in contrast with most accounts

departments which are generally over-burdened with the weekly wages chore.

Payment through the bank, and the improvement in status that goes with it, together with the other benefits, have led to a conviction in the town that Texas Instruments are good employers. To the company this means a lot, because they will be requiring a large increase in personnel during the next few years. When large-scale production of transistors begins at a new plant of considerable size to the north of Bedford, there will be employment for more than 1,000. At present they have a waiting list of suitable young women in a town that has no shortage of jobs.

Labour turnover is negligible. So far only a few have left—for purely domestic reasons. Low labour turnover means that training is not wasted and production teams disrupted.

END

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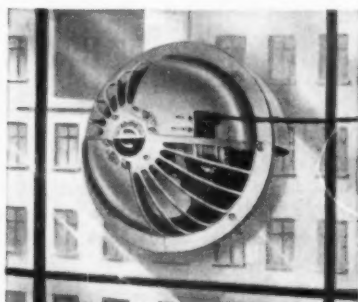
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They Put Slide-rules on All Staff Jobs

by Robin Baiden

FOR over six years Joseph Lucas Ltd., the Birmingham manufacturers of accessories for cars and aircraft, have been installing a job evaluation scheme which now covers 85 per cent of the company's staff employees.

The result is a graded and comprehensive specification for each staff position, so that a sound pay structure is in operation throughout the organization. Employees know their areas of action and responsibility, as well as the rates for their jobs. Turnover of staff covered by the scheme has fallen consistently since its introduction.

Before the scheme existed Lucas had to rely on a broad job classification system, together with individual assessments at managerial level of the responsibility and importance of the many staff jobs. Such a system was satisfactory up to a certain level but caused difficulty in considering jobs of entirely dissimilar content but of comparable responsibility. Because of these difficulties the resulting pay structure lacked complete consistency and no one could be really sure what a particular job was worth.

So Lucas called in Mead Carney and Company, management consultants, to install a job evaluation plan for non-supervisory grades. This plan was steadily extended by the Lucas group's own organization control department to cover supervisory grades as well. It has now

**Measuring jobs—and the people
who do them—has many advantages.
Pay anomalies are removed, and
training and promotion are done
on a rational basis.**

reached the point where no comparable system is in use on as wide a scale by any other British company.

What the scheme does

The basic purpose of the scheme is to establish a firm basis for a sound staff salary structure throughout the organization. The scheme does four things:

- 1—Brings into line jobs of equal responsibility and importance throughout every department.
- 2—Creates a system ensuring fair remuneration for each job, commensurate with duties and responsibilities.
- 3—Institutes wage levels consistent with those paid by other good employers.

- 4—Establishes methodical means of promotion.

The worth of each job is determined in relation to others, without regard to personalities. Assessment is of the job, not of the person doing it.

A permanent evaluation committee sit in each of the firms in the group. A central committee co-ordinate their activities. Here is how these committees apply job evaluation.

Method

Evaluation is by means of a points system. Points are allotted to a number of factors which are common to all staff jobs. Each factor has a total weighting which reflects its relative importance. Each total

Job Factor Values

FACTORS	POINTS ALLOTTED	
SKILL		
1. Education	240	620
2. Experience	380	
RESPONSIBILITY		
3. Initiative	260	560
4. Dependability and Accuracy	250	
5. Costs Responsibility	50	
MENTAL REQUIREMENTS		
6. Planning Co-ordinating and Analytical Requirements	270	540
7. Co-operation and Contact	270	
PHYSICAL REQUIREMENTS		
8. Mental Fatigue	90	150
9. Physical Fatigue	60	
10. Working Conditions	60	60
TOTAL POINTS:		1930

weight value is broken down into degrees, ranging from low to high. Each degree is defined and assigned a certain number of points.

In evaluating a job, the committee decide the degree of each job factor applicable to the job in question, thereby obtaining a point value for each factor. The total number of points assigned gives the point rating for that job.

The selection of the common job factor entails the considering of basic elements applicable to all jobs. In practice, five basic elements are divided into nine sub-headings in order to make a more detailed evaluation.

Thus the elements used to select a job factor are as follows:

- 1—**Skill**, divided into:
 - (a) education;
 - (b) experience.
- 2—**Responsibility**, divided into:
 - (a) initiative;
 - (b) dependability and accuracy;
 - (c) costs responsibility.
- 3—**Mental requirements**, divided into:

- (a) planning, co-ordinating and analytical requirements;
- (b) co-operation and contact.

- 4—**Physical requirements**, divided into:

- (a) mental fatigue;
- (b) physical fatigue.

- 5—**Working conditions**

A maximum number of points is allocated to the above factors taking into account their relative importance; a table showing the values appears above.

Lucas define the job factors in this way:

Education—Minimum level of education or training required.

Experience—Total time normally required to become proficient in a job. This time includes normal prerequisite experience on other jobs, instruction, and practice.

Initiative—Self-reliance, adaptability and drive required to anticipate and provide for changing conditions, overcome obstacles and finish the job.

Dependability—Degree of accuracy

and thoroughness required in calculating or presenting data; and reliability in handling confidential matters and company property.

Costs responsibility—Responsibility where faulty judgment involves company in financial loss.

Planning requirements—Extent to which ability or ingenuity are required to resolve complex data or problems, to draw conclusions and plan action.

Co-operation—The extent to which the job requires harmonious relationships with associates and the public; tact, poise and persuasiveness.

Mental fatigue—Nervous energy required by the job.

Physical fatigue—Intensity and degree of continuity of muscular effort.

Working conditions—Those elements beyond the employee's control, including job hazards, which may affect his well-being.

These factors are then broken down into degrees. For example, here is a breakdown of **initiative**:

Lowest—Under close supervision, performs routine and simple tasks requiring few decisions and only a minimum amount of independent action.

Needs supervision—Performs various repetitive operations from detailed instructions and under immediate supervision. No deviation from established routine but some independent action in making minor decisions within the limits of the routine.

Perseverance—Performs varied but semi-repetitive operations following standardized methods and procedures under changing conditions, with immediate and direct supervision. More than average amount of perseverance and some independent action required.

Independence—Independently obtains solutions to problems. Considerable independent action and perseverance needed.

The evaluation committee decide which degree is applicable to the job



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and the number of points assigned to that degree gives the rating for that particular job factor. Add up the job factor ratings and the result is the total of points for the staff job being evaluated.

Employees informed

Lucas regard it as paramount that the scheme is explained to employees personally. All staff whose jobs are to be assessed also receive a leaflet. This further describes the system of merit rating which is carried out after job evaluation in order to assess the efficiency of the employee performing the job.

Then departmental managers distribute a job evaluation questionnaire to each employee, who fills in full information about the scope and responsibilities of his job. His immediate supervisor makes any modification that might be necessary—but only after discussion with the employee. Then the questionnaire is passed to the organization control department.

This department then prepare a draft job specification, which is discussed with the supervisor concerned and modified where necessary. From this, organization control department prepare the final job specification and arrange a meeting

of the job evaluation committee to consider the job. At this meeting each member of the committee receives a copy of the specification and independently considers and evaluates the job, using a grading guide. When all members have done this, the committee discuss each factor of the job and agree a rating.

The format of a job specification is shown below.

The total points allotted to each job define the grade into which the job falls and the grade gives the applicable pay range.

Merit rating

Merit rating goes hand-in-hand with job evaluation in the Lucas plan. It helps in assessing the efficiency of employees. The rating is made under these headings:

- Knowledge of work.
- Output.
- Accuracy and reliability.
- Use of initiative.
- Co-operation.
- Responsibility.
- Discipline.
- Regularity of attendance.
- Punctuality.

The resulting merit rating helps in selecting employees for promotion or pay increases.

Advantages

Here are the six principal advantages of the job evaluation and merit rating systems:

1—**No salary anomalies.** They establish minimum and maximum salary for each job, avoiding the under- or over-payment for jobs similar in nature.

2—**Simplifies administration.** Salary administration is simplified. There is a logical basis for salary reviews.

3—**Better incentives.** The development of a logical promotion ladder provides the incentive for employees to train for better jobs. The fact that each job carries a grade number makes it possible for the employee to foresee the jobs to which he or she can be promoted.

4—**Promotion from within.** The provision of a means of giving preference to the company's own employees in filling job vacancies.

5—**Jobs defined.** Duties and responsibilities of each job are clearly defined. The personnel manager has a guide for engaging new employees. And supervisors can think objectively of jobs, unbiased by personalities.

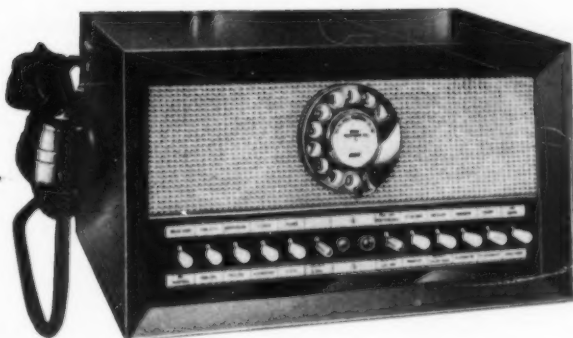
6—**Complaints answered.** The provision of a means of properly answering complaints about alleged unfair pay differences.

END

<u>JOB SPECIFICATION</u>		
JOB TITLE:	Production Foreman	GRADE:
FACTORY:	SUPERVISOR	Factory Superintendent
DEPARTMENT:	Factory Supervision	DEPT. NO.
		DATE AGREED
<p>GENERAL FUNCTION: Responsible to a Factory Superintendent for the supervision and control of all the labour in his department and for the economic production of finished or part finished products as scheduled and according to the established quality standards.</p>		
<p><u>DUTIES AND RESPONSIBILITIES</u></p> <p>To supervise and control all labour employed in his department for the</p>		

The existence of a specification for every job means that promotion and training can be carried out systematically to them

The Reliance Loudspeaking Automatic Master Station especially designed for use by the busy executive.



sound sense ...

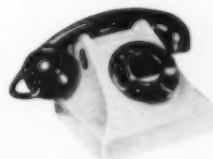
in any type of organisation means the fullest co-operation between staff and the co-ordination of effort. The Reliance Intercommunication Telephone Systems help to provide just that. They have long been established as an essential factor in business efficiency and many thousands of daily users are evidence of their value. Information is obtained, queries settled and even conferences held while all concerned remain at their desks—and the P.O. switchboard is free to deal with normal traffic. The choice of Reliance reflects sound sense—ensuring reliable efficiency



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THE BOSS by Roy Lewis and Rosemary Stewart (Phoenix House Ltd.) 21s. net, 22s. 6d. post paid, will help any young businessman to promotion—or help him to understand why he does not get it. It also gives him a taste of what life is really like at the top.

It is essential for the ambitious young man to *appear* to have personality. He must appear to be a leader. And he must draw attention to himself. Businessmanship is laid bare.

So, too, are expenses and their relation to salaries. But the penalties of success are underlined—strain, bad health, or the frustration and loneliness which often face the executive who wants to change his job.

How should the executive behave when he gets near the top? He must be circumspect; for instance, he must not buy a flashier car than those of his colleagues—or of his managing director.

INTEGRATED COST CONTROL IN THE OFFICE, by Frank M. Knox (McGraw-Hill) 58s. net, 60s. post paid. By 1950 the number of white collar workers in the U.S. equalled 27 per cent of the total labour force, including farm workers. Between 1870 and 1950 the number of paper workers grew more than five times faster than the rest of the labour force. Facts like these underline the author's basic theme of combating the dangerous encroachment of office costs on the profits of modern business. What he has to say applies with hardly less force to Britain.

The method of combat he advocates is procedural streamlining, both to restrict the demand for labour in the office and to pave the way for such automation as may be necessary. He goes on to describe in detail how to analyze the paper work in an office; carry out a job-evaluation; define responsibilities; break office costs down into categories, as in the factory; improve methods; and then maintain the new standards established.

In the very large firm his approach may result in staff reductions. The medium or small one, however, is far more likely to obtain faster and more accurate results from existing staff, which may even need to be enlarged later, due to increased business.

As a management consultant, Mr Knox has first-hand knowledge of his subject, presenting it in a language and form readily understandable to the office executive.

OWNERSHIP AND CONTROL OF AUSTRALIAN COMPANIES by E. L. Wheelwright (Sweet and Maxwell) 42s. net, 43s. 6d. post paid. A detailed analysis of the shareholdings and directorships of 102 of the largest public companies incorporated in Australia. It shows a broadly similar state of divorce of ownership from directorial control to that first revealed in the 1932 study of America by Berle and Means. But the barrenness of this conclusion, left in the air as it is, comes from failure of the authors of both books to appreciate that enterprise and initiative are more important directorial functions than control. The customers do the ultimate controlling by deciding to buy or not to buy the company's products, thus passing judgment on the degree of enterprise shown.

If Mr. Wheelwright had not been led by his socialist readings into the quagmire of control, he might have drawn very different conclusions. He might have pointed out that if the typical modern enterprise contains a large number of small shareholders, is led by directors who do not control a large shareholding, then the employees might just as well join in and

become shareholders too—not for the sake of trying to control the firm, but merely to constitute some of the capital needed and to participate in the experience of owning a part of industry.

CONCISE OXFORD ATLAS, second edition (Oxford University Press) 30s. net, 32s. post paid. A 250-page version of the complete "Oxford Atlas," covering the whole world, with maps depicting historical, geographic, industrial, business and communications, cultural, population and other aspects of world life. There are, of course, a particularly great number of maps covering Britain in detail, and the indexes are very extensive.

AUTOMATION AND MANAGEMENT by James R. Bright (Bailey Bros. and Swinfen) 80s. net, 82s. 6d. post paid. A detailed study by a Harvard Business School professor, which includes descriptions of the automation programmes of 13 American plants. A special point is the author's interest in the automation of assembly, in contrast to the automation of machining, which is more usually written up.

A GUIDE TO THE PRACTICE OF PUBLIC RELATIONS (Newman Neame) 30s. net, 31s. 6d. post paid. Published for the Institute of Public Relations under an editorial board of outstanding men in the British PR field, and with 23 leading contributors, this is a most valuable first textbook (the only one of its type in Europe) for the recruit to public relations.

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Office Equipment on the Continent

Automation was the main theme at this year's Paris Exhibition

by Laura Tatham

PROGRESS in the office equipment field, as indicated by this year's French version of the Business Efficiency Exhibition, seemed on the whole to be along well-defined lines. But if there was little in the way of revolutionary ideas, there was much of interest.

Theme of the exhibition was *automation and comfort*. It was in the first of these that the public seemed to show notably more interest. Stands showing electronic computers were at all times crowded to suffocation.

A good second for public attention were accounting and other machines with a high degree of automatic action. Some were coupled to tape-punches or other data-producing devices. In comparison, stands showing furniture and orthodox filing systems, for example, were thinly patronised. Undoubtedly a good proportion of the businessmen (there were few women) who attended the Exhibition had come to 'bone up' on

automation and to keep abreast of new developments of every kind.

Computers—well advanced

The computers themselves were well advanced. The Bull *Gamma 60*, a large computer with magnetic tape storage, is in production. One machine is already installed and five more will be delivered within the next year or so. A number of smaller electronic computers and calculators by the same company are already working in France.

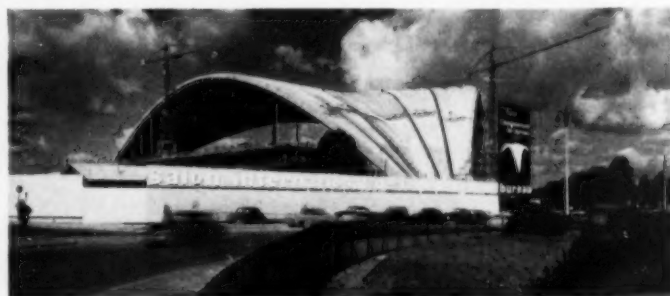
IBM had their RAMAC computer on show. One 628 electronic calculator with ferrite-ring memory has already been installed; others are on order. This calculator was entirely evolved in France by the local branch of IBM, and is designed for small and medium-sized businesses.

French manufacturers seem to be making a noticeable effort to 'beat the squeeze' by producing domestic versions of foreign machines which are difficult to import, and sell in France at prohibitively high prices. An example of this is a French version, new for the exhibition, of a bank accounting machine, which enters a balance automatically on a magnetic strip at the back of ledger cards; and picks up and prints balances from the same source.

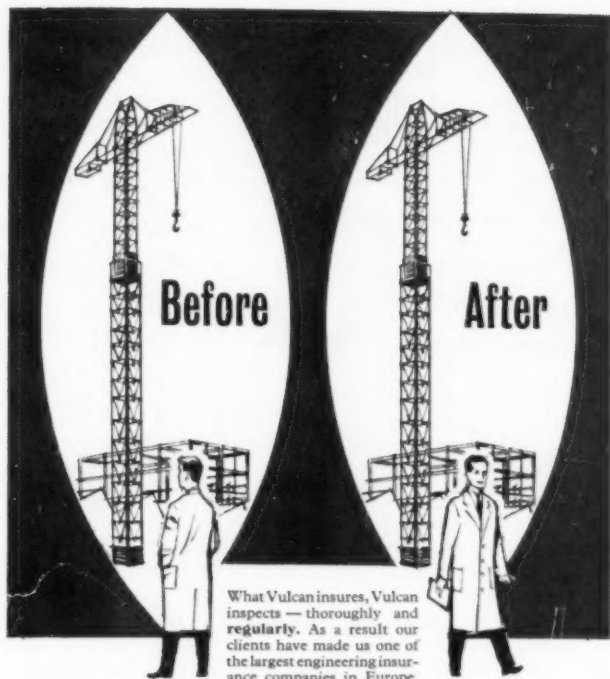
Also in evidence was an electro-mechanical invoicing machine which automatically calculates extensions from figures entered on its typewriter keyboard, and prints out the results.

Wood-plastic desks

An ingenious new French idea for cutting furniture costs was



The exhibition was held at the spectacular Palais des Expositions du Centre National des Industries et des Techniques. When completed, this will provide 24 acres of exhibition space



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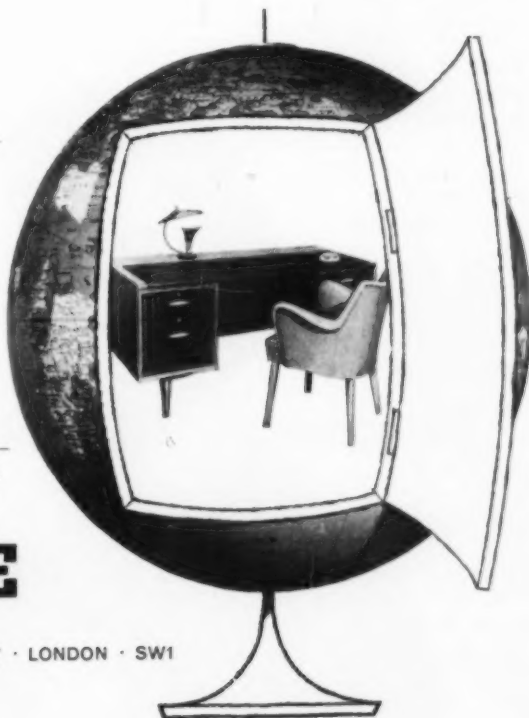
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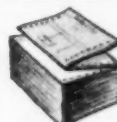
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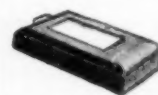
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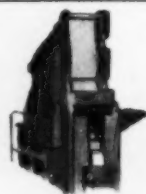
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wooden desks covered completely outside with dull-finish vinyl plastic. In appearance these closely resemble the metal equivalents, but cost considerably less. At the same time, they are warmer to the touch, easily cleaned, and available in a wider variety of finishes than would be possible in metal. This furniture is for general or executive use.

No less ingenious, perhaps, but curiously primitive in concept was a new statistical device (also French) which reckoned quantities by weight. It could be described as a manually-operated substitute for the mechanical multi-register statistical machine. The device consists of a framework, as large as the top of a good-sized table, into which a large number of small open-topped boxes are inserted. Over this is mounted a distributor carriage which slides on rails and which contains a similar box.

Each box in the framework could represent a commodity; numbers or quantities are represented by small steel balls in various sizes and weights, rising in units of 10, the smallest weighing, say, 10 grams and representing perhaps 1, 10, or 100 units as the user might desire. To indicate 110 in one category, therefore, the user would use one 10 ball and one 100 ball, dropping them into the correct box by means of the distributor carriage. At the end of the day, or other accounting period, the total in each 'register' would be assessed by weighing it with its contents on a pair of scales provided.

Though the device is a great deal cheaper than a statistical machine of comparable scope, and demands no skill of the operator, it represents an odd harking back to the most primitive methods of counting.

These were new, too

Transparent envelope. A German-designed automatic plasticising machine which instantaneously encloses any document between a 'sandwich' of transparent plastic film. Similar in size to a desk-top photocopier, it is operated merely

by switching on current and inserting the document into the feed. The whole process takes about half a minute, after which the sides of the film are trimmed away to within about $\frac{1}{4}$ in. of the document edge on a hand-operated guillotine.

Fast collator. An electric collator, American in origin but manufactured under licence in Brussels. Sheets are placed flat in pigeonholes arranged in pairs one above the other and sloped sharply back from the operator, who is seated in front of them. A touch of a button causes the machine to present one sheet from each pile (there are 10 pigeonholes) to the operator, who gathers them up and places them into an electric jogger on a table to his left. The process can be almost continuous with a practised operator, and requires a minimum of physical effort.

Stencil kit. A neat kit, in shape like a large shallow box, for making photographic stencils for duplicators. The original—a screened photograph, a drawing, printed or handwritten matter, etc.—is first placed on the flat glass screen in the box and photographed by the machine on to transparent foil (exposure is timed on a dial). This image is then transferred by a similar process to the stencil. Finally the stencil is developed in a darkroom in a similar way to a photograph. It is said to yield at least 10,000 copies. Though the process itself is not original, the exposure equipment (which produces a same-size copy) is a great deal smaller than the large process camera usually needed for this work. It can also be used to photocopy documents. The machine is French in origin.

Auto dialling. A telephone dials out numbers automatically at the insertion of a punched card. The instrument has extra depth in the base plinth, and a slot into which cards are inserted. A personal directory is made up in the form of a card index, with the name and number written or typed at the top.

The number is hand-punched into the same card. This is inserted into the telephone without lifting the receiver. The ringing or other tone is fed into a small amplifier. When the called person is heard to answer, the caller lifts the handset and speaks in the normal way. The amplifier is not used during conversation, but is intended to save the caller listening in to see what response the call produces. This device was invented in France.

Mobile microfilm. A very small portable microfilm camera which occupies little more space than a typewriter. The whole device, which is American in origin, folds together into a metal case.

Rotary file. A rotary file for ledger cards or similar documents. The cards are held in a number of containers suspended on a vertically-revolving wheel, the whole rather resembling a small-scale version of a mechanical dredger.

Motorized microfilm reader feeds 16 or 35 mm. perforated or unperforated film through it automatically at varying speeds. The image, which is thrown clearly on to a ground glass screen, can be turned through 90 degrees, if necessary, for reading. The reader is made in two sizes, the smaller for office use, the larger for libraries or drawing offices.

Plug-in phone. A mobile internal telephone system which operates from an electric lighting point. The instruments look rather like a small radio set, and are operated by push-button.

The impression received from this year's exhibition was that, in general, there are few machines available in France which cannot be obtained in this country. On the whole, perhaps, the newest American developments tend to reach the Continent sooner than Britain. But the range and scope of equipment of all kinds is, with few exceptions, similar to that produced in, or imported into, this country. *END*

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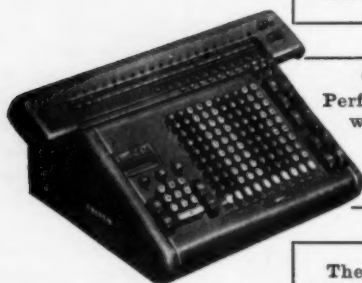
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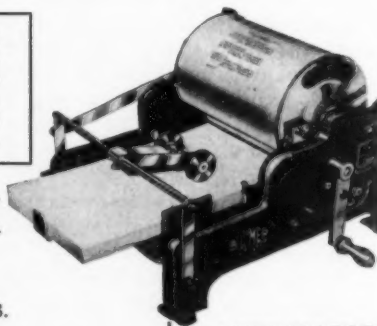
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To ensure good contact the printer has a vacuum lid. An automatic time exposure dial and a highly efficient cooling system permit high



Keeps cool on long runs

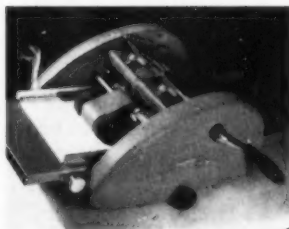
output over a long period, the manufacturers claim. Alternative light values are obtainable by moving a knob.

The cabinet of the printer is made of satin-finished pressed steel with trimmings of stainless steel and plastic. It measures 26½ in. wide, 12 in. high and 19 in. deep, and runs off a 200-240v. mains supply.

Remington Rand Ltd., Commonwealth House, 1-19 New Oxford Street, London, W.C.1.

Spirit duplicator is hand operated

A small hand-operated spirit duplicator which is made in France has recently appeared on the British market. The machine can make up to 250 copies, the makers claim, quality of reproduction being kept even throughout the run by a variable pressure device with five different positions.



Makes even copies

The *Polyjapy* can, like other machines of its class, reproduce in several colours simultaneously, and is suitable for copying typed, handwritten or drawn material. Spirit is applied evenly by an automatic device which feeds fluid drop by drop on to a felt pad.

Full servicing facilities are available throughout this country. *Business Machines Japy Ltd., Colston House, Derby Road, Nottingham.*

Files move forward as cabinet opens

Designed for use with *Railex* suspended files is the new *Presento* cabinet. It consists of four or fewer independent drawers, each with a drop front. As the operator



Holds 200 suspended files

opens the front, the files move toward her, giving maximum visibility and ease of access.

The cabinets are metal with a grey hammer finish. The four-compartment model illustrated here is a single lockable unit. Alternatively, non-locking compartments may be assembled on a unit principle, starting with a two-compartment cabinet and adding other single compartments vertically as desired.

Capacity of each compartment is about 50 suspended files.

Frank Wilson & Co., 55 Fore Street, Moorgate, London, E.C.2

Formfeed for electric typewriters

Designed exclusively for use on electric typewriters is the newest



Has automatic line-finder

Formaliner form-feed attachment. Its aim is to extend the benefits of an electric machine by providing a means of fast, accurate feeding of multiple sets of continuous forms.

The attachment fastens to the outside edge of each end of the typewriter platen. It incorporates, on either side, six-pin tractors, which engage the holes in sprocket-punched stationery. This ensures that faultless alignment occurs, both in a horizontal direction and through any number of copies.

An automatic line-finder cuts the time usually wasted in placing forms in the correct writing position. This

* Equipment included in this survey is selected for its news value alone. Manufacturers are invited to submit details of new and interesting products for consideration. An original photograph should accompany each item submitted.

New EQUIPMENT

OFFICE

device is pre-set according to the length of forms to be typed; by using it, the typist can align the next form in the start position in a single movement immediately after completing the preceding one.

Lamson Paragon Ltd.,
Paragon Works, London, E.16.

Spirit process cuts time and labour

Any typed, printed or drawn material can be transferred same size, enlarged or reduced, to a spirit duplicator master by the new *Flo-Set* unit, used in conjunction with stand-



Small finishing unit

ard *XeroX* equipment. By this process a spirit master is made in five minutes or less at a cost of about fourpence.

First steps are similar to those used in producing a litho master by xerography. The image is photographed by a process camera on to a special type of plate and then developed in a processor so that the image is outlined on the plate in finely powdered ink.

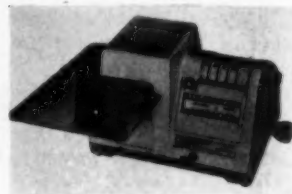
Then the hecto carbon is placed in contact with the powder image, and the latter is transferred to the carbon by an electrostatic charge. Next, master paper and carbon are placed in the *Flo-Set* unit. There the powder image on the carbon is made tacky by a chemical vapour; and, as carbon and paper are pressed together by rollers, the image is transferred to the master sheet. Finally, on emerging from the *Flo-Set*, the two sheets are stripped apart. The spirit master, which

in clarity and durability compares well with one produced by existing methods, is ready for immediate use.

Rank-XeroX Ltd.,
33-41 Mortimer Street, London, W.1.

Redesigned franker is easier to use

The *Automax* postal franking machine has been extensively



Cased in fibreglass

redesigned to make it smaller, lighter, easier to use, and much more attractive in appearance. Intended for the busy mailroom, it prints any postage value from ½d. to £4 19s. 11½d. The hand-



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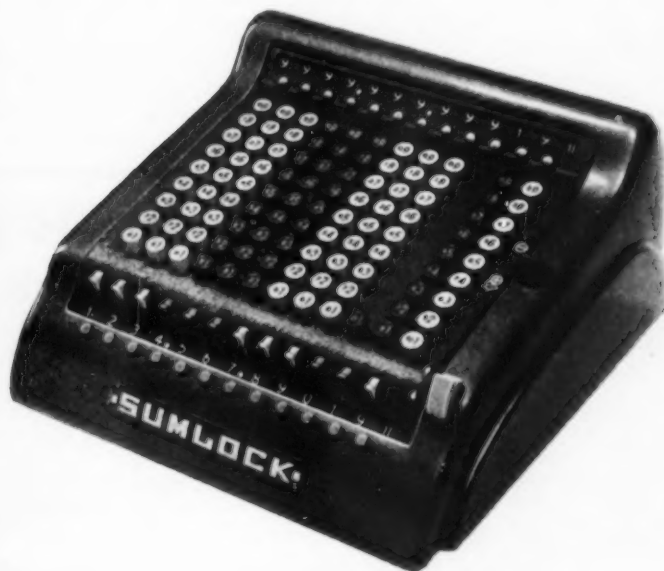
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Bell Punch also manufacture: Adding Machines, Fare Collection Systems, Cash Control Systems, Tickets and Receipts, Ticket Printing Machinery, Taximeters, Totalisator Equipment, and Aircraft Instruments



New EQUIPMENT

OFFICE

operated version franks 40 pieces of mail per minute; the electric model, 80 pieces.

The machine, previously supplied with its own stand, is now small and light enough to fit on a small table. The front face containing the numeral dials, which indicate the amount in the machine and amount spent, is sloped toward the operator for easier reading. Frank values are set by levers and shown in individual dials for pounds, shillings and pence.

To avoid incorrect use by an inexperienced or careless operator, the machine has a trip mechanism. This means that no amount can be registered unless a letter is actually put into the machine—thus no money is wasted. The large platen accepts envelopes of any size. Parcels and thick packets are catered for by a built-in label roll; the label is franked, automatically guillotined, and affixed to the package by hand.

An advertising slogan or return address can be printed simultaneously with the frank by means of interchangeable metal plates.

The machine, which is fully approved by the Post Office, is cased in cream-coloured fibreglass. The cash registering portion can be detached for taking to the post office.

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DECEMBER, 1958

107

THE 4 REASONS

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Stenorette

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PRICE 53½ GUINEAS**
including these accessories:

TAPE CASSETTE & SPARE SPOOL, THE DUAL PURPOSE DYNAMIC MICROPHONE,
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1•PRICE *Costs less—does more.* The world-famous Stenorette is yours for only 53½ guineas. That's only *half* the cost of other major dictating machines. Yet, despite its amazingly low price, the Stenorette is a fully-equipped precision business machine that gives you every control, every time-saving convenience you can think of... *plus* other advantages you can't get elsewhere at *any* price. You dictate and transcribe with the same machine! One Stenorette does both jobs. That's why every office—large or small—can afford a Stenorette.

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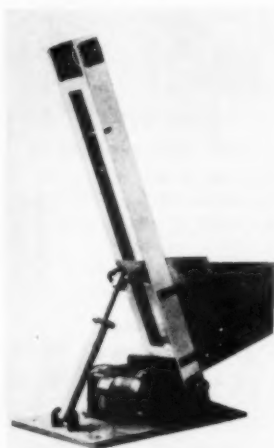
Trade enquiries to: Newlands Park, Sydenham, London, S.E.26 (Electronics Division, Gas Purification & Chemical Company Ltd.)

WORKSHOP

Conveyor operates at any angle

Quicker and more direct movement of steel components is offered by the *Rapid* magnetic elevator.

Unlike conventional conveyors,



Moves components quickly

the angle of inclination is not important since the unit operates at any angle from the horizontal to the vertical, and, in some cases, is arranged to lift vertically prior to transporting horizontally.

Either side of the conveyor can be the operational surface. This enables components to be suspended from the underside.

The equipment is self-contained and adaptable, and produced in several belt widths.

Rapid Magnetic Machines Ltd., Lombard Street, Birmingham, 12.

Magnetic drum is small but powerful

Latest in coolant clarifiers is the *Magna-Drum*, the whole surface of which is magnetic as distinct from the conventional type which employ horseshoe magnets in non-ferrous cylinders.

So intense is the unit's magnetic field that grinding abrasive is always

in the swarf that collects on the drum's surface. This is removed by special scrapers.

Smaller and more compact than any comparable clarifier of equivalent capacity, it measures only 6in. in diameter. Straight cutting oils or oil coolants can be filtered without modification to the drum. The range handles flows of 300-5,000 gallons an hour.

Philips Electrical Ltd.,

Century House, Shaftesbury Avenue, London, W.C.2.

Servo units give high torque

Lightness, high torque and a minimum of moving parts are features of new *Harvey* servo units.

Whereas earlier versions relied on a vibrating relay, the new series has a motor fed via power transistors from either A.C. or D.C. supply.

Various gear ratios are available, giving up to 20 times the normal



Light, compact

speed of response with proportionately less torque. Gears and gear box unit are also available separately.

Servo Units Ltd., Farnborough Road, Farnborough, Hants.

Flame controller is smaller, cheaper

Measuring only 6in. by 4in. by 2in., a new unit which guards against flame failure in oil burners makes use of the recently introduced cadmium photocell.

The controller is mounted on the boiler front plate, 'looking at' the flame inside the boiler. As long as

the cell 'sees' a flame, an amber light shows. But if the flame goes out a red light shows, and the oil supply is cut off.

Photoelectronics (M.O.M.) Ltd.,

Fotron Works, 63a Kingston Road, London, S.W.19.

Glass-fibre roofing is cheaper

Made as flat or corrugated sheet, new *Undulite* has now two thicknesses, three grades (standard, best weathering, and fire-retarding) and a wide range of colours.

Claimed to be up to 20 per cent cheaper than before, it is a glass-fibre roofing with improved translucency and improved properties.

Plastics Dept., Dexion Ltd.,

Cartersfield Road, Waltham Abbey, Essex.

Less damage with new doors

Improvements in the *Harefield* range of flexible rubber doors for industrial premises mean less risk of damage to goods passing through, and to the doors themselves.

Hinges—only one to each door—are mounted well out of harm's way right at the top of the doors. A ball at the foot of each door is the pivot, reducing friction to a minimum and making opening easy.

Special precautions are taken to protect the spring that closes the door from over-tensioning. Disengaging the retaining arms allows



Easily maintained

the doors to be left open. Maintenance is easy: by undoing only four bolts each hinge unit is removed for servicing.

*Superbuilt Products Ltd.,
Bell Works, Harefield, Middx.*

Simplifies heating of large spaces

Claimed to be the largest radiator of its type, a new unit simplifies the heating of large areas.

The radiator is oil-filled and electrically operated, and is rated at 5kw. It is designed for areas where heating must be confined to one source, or the number of units must be reduced.

A thermal cut-out limits the surface temperature to 170deg. F. If necessary, thermostat and time-switch control can easily be added.

Dimensions are 42in. high by 46in. by 8½in. Heating surface is 89sq.ft. *Gulf Radiators Ltd.,
229 Regent Street, London, W.1.*

Floor machine scrubs or polishes

Simple to operate, and requiring little or no maintenance, the *Poliscrub* floor cleaner has been remodelled to sell at a low price. It can also be hired from the manufacturers.

Adjustable wheels control the pressure of the brushes. Manoeuvring is easy, making it suitable for use in restricted areas. Maintenance

is simple. Brushes are replaced at lower than normal cost. Alternatively, the makers offer a maintenance service at a fixed nominal charge.

There are two models—a single-purpose polisher and a combined scrubber/polisher. The polisher can be converted simply by adding a tank.

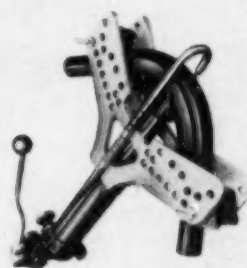
*Resco Machines Ltd.,
Wycombe House, Amersham Hill,
High Wycombe, Bucks.*

Shaping tool for any surface

A general purpose tool, the *Stanley Shaper*, will shape and finish most wood, leather, plastic, brick, rubber, and mild steel surfaces.

Shapers are being produced in both file and plane versions. The blades, replaceable and interchangeable, will not clog. There are 500 cutting

Any degree of bend can now be produced without calculation by reading from the tubular scale. In



Bends easily calculated

addition, the length of arc can also be pre-determined before bending so that the exact length of tube can be cut.

*Chamberlain Group, Staffa Works,
Staffs Road, Leyton, London, E.10.*

Illuminated ceiling throws no shadows

Designed for speedy installation in both new and existing buildings, the *SGB Grolite* luminous ceiling provides shadow-free illumination in offices, factories, showrooms and other buildings.

Channel sections of 16 gauge mild steel are held by rods hung from the structural ceiling, and support in-filling panels.

The luminous ceiling itself is available in fibreglass or p.v.c.

*Metal Lathing Division,
Scaffolding (G.B.) Ltd.,
Willow Lane, Mitcham, Surrey.*

Quick-heat solder gun

Weighing only 1½lb. and trigger-operated, a new soldering gun takes seven seconds to reach soldering



Hot in seven seconds



Blades will not clog

teeth. These plane the nails left in wood as efficiently as the wood itself.

Cast in light alloy, they have compressed moulded rubber handles.

*Stanley Works (G.B.) Ltd.,
Rutland Road, Sheffield, 3.*

Chart tells angle of bend

A calculator chart and angle of bend indicator are now available for *Staffa* tube benders.

The chart is engraved on a metal plate and is readily fitted to the lid of the carrying box provided for the machine and dies.

The indicator consists of a chrome plated hollow rod graduated in inches which slides into a housing fitted in the top observation hole in the forming head.



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As all executives know only too well, and too often ignore, hustle and bustle is not a true indication of efficiency. A correctly relaxed body encourages an orderly mind.

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temperature, and is supplied complete with two yards of flex.

A transformer built into the handle reduces the voltage to safe limits. A pilot bulb shines on the workpiece. *Creators Ltd., Sheerwater, Woking, Surrey.*

Fold-flat cases protect goods

To cut down damage in transit, *Venesta* collapsible cases act as containers for any delicate articles, such as glass and electrical fittings.

Sizes vary, but all fold flat when not in use and are reassembled in seconds by unskilled labour. Of 5mm. birch plywood construction, each case comprises two riveted, metal-edged plywood trays with heavy gauge corner brackets. Both



For delicate goods sides and ends are strip metal to ensure rigidity. *Venesta Ltd., Vintry House, Queen Street Place, London, E.C.4.*

Gauge checks liner wear

Designed for checking the liner wear in free piston gasifiers, a new gauge slides into the bore to be checked and adjusts for extra height by means of four-arm spiders situated at either end. A sliding



Easily adjusted

carriage traverses the tubular bed of the instrument.

Setting is by reference to a master ring gauge. *British Indicators Ltd., Sutton Road, St. Albans, Herts.*

Couplings make up hose assemblies

As an addition to the *Dunlop* range of flexible pipes, re-usable detachable couplings now enable users to make up their own pipe assemblies to the required length.

Designed for use with hose pressures of between 1,000 and 5,000lb. p.s.i., the couplings also increase assembly life by enabling worn hose or damaged couplings to be replaced. *Industrial Wire Braid Dept., Dunlop Hose Division, St. Georges Road, Coventry.*

Castor jacks up 3in.

Of welded steel throughout, and swivelling on tapered bearings and bronze bushes, the *Flexello 3* to 4 ton jacking castor has a lift of 3in. The



Lifts and locks

main body is fitted with a spring-loaded locking device giving four-direction locking positions to the castor.

The rubber tyred wheels are 12in. in diameter and 5in. wide. In the fork construction is a hole which assists movement when the castor is at rest, or helps to steer. Overall height is about 40in., weight 450lb. *Flexello Castors & Wheels Ltd., Bath Road, Trading Estate, Slough, Bucks.*

CANTEEN

Milk—at the drop of a coin

The *Automat* milk-vending machine holds 100 half-pint sealed cartons of milk in five columns of 20 packs, making five different flavours available by gravity feed when a coin is inserted.

The refrigeration unit is hermetically sealed, and an evaporator is situated at the top of the machine. Only 8 minutes are needed to insert a fresh supply of 100 packs.

Dimensions are height 6ft. 6in., width 4ft. 2in., and depth 1ft. 1in. *Automat Machine Sales Ltd., 173 Elmers End Road, Beckenham, Kent.*

Good coffee for the dining room

Consisting of a filter and a storage container, the *Melitta* coffee unit makes up to 60 cups of hot, fresh coffee. The filter, containing ground coffee, is placed on top of the elec-

trically heated container and boiling water is slowly poured over it.

The container is porcelain with an aluminium casing, and is easily portable. Coffee, tea, milk, soup, cocoa, etc., are kept at a temperature of 175-195deg. without boiling. *Infra-Heat Co. Ltd., 22 Clifton Road, London, W.9.*



Holds 60 cupfuls

LAMSON

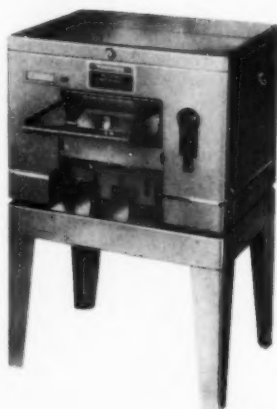
PIONEERS THE CONQUEST OF INNER SPACE

Did you know that Lamson Carrier Airtubes are used to transmit steel samples, small spares, tools, surgical instruments, drugs, printing plates, documents and other items, speedily within organisations of all types utilising some of the unexploited Inner Space available? A Carrier in one of the larger systems (13" x 5") conveys loads of 7 - 10 lbs. vertically and horizontally and at a speed of approximately 30 feet per second.

On the right is the new 'V' Trough Document Conveyor. Multi or single lane, for carrying cards, tickets, letters, etc., with maximum speed and economy of space. The document is moved on edge by a narrow belt. Each lane can be used for a different class of document, a different processing or direction.

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Joint Consultation

Starts on page 82

of information must be two-way. Management has much to communicate, and has much to learn, too, of the reaction to its policy.

Joint consultation involves joint responsibility. If the onus is on the chairman to put over information, it is equally incumbent upon the member to pass the substance of it to his electorate. Minutes are of assistance, but in reporting back over-reliance should not be placed upon them. Anyone can read minutes, but unfortunately not everyone does. The member must be prepared to inform his constituents verbally of what has transpired.

Freedom of expression is the essence of joint consultation. Nothing curbs enthusiasm more than a feeling that the 'whips are on.' It is up to the chairman tactfully to keep discussion to the point and

expression within the bounds of propriety. But in expressing an opinion, the member must always bear in mind that he is a representative of a number of people; and the views of this constituency should not be subordinate to his own.

The agenda

One of the most potent factors in maintaining interest is a carefully prepared agenda. Members are encouraged to submit items for it, and every endeavour is made to get beyond such stock items as 'minutes of the last meeting,' 'correspondence,' 'any other business' and so forth.

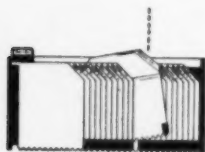
The chairman's report is always an important item on the agenda and it gives scope for variety. It covers everyday events in the running of the under-taking, the company's trading position and future prospects, and a survey of the international situation, as it affects the company.

Experts are invited along to talk on their particular subject. The speaker may come from a subsidiary company or from an undertaking in which the rank-and-file are interested. We have made use of the sale room expert, the chief engineer, the chief chemist and the company accountant.

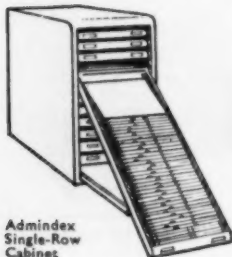
Stimulating interest

One annual item on the agenda of the Council is the company accounts. This takes place each year after the annual general meeting of shareholders. Members are presented with a copy of the company's balance sheet and a financial director is present to explain it. From questions asked, it is obvious that the director's time is not wasted.

Interest in the company's finances is not confined to the Council. One group committee in particular has taken a very practical step in this sphere. The committee hold jointly a block of the company's ordinary



Vistem
Mobile Unit



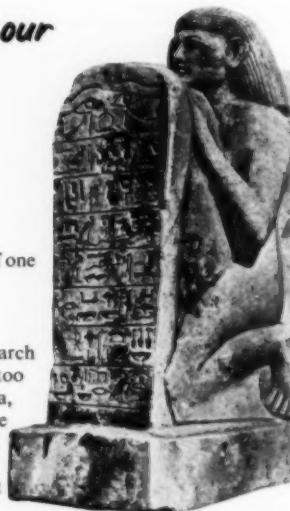
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shares and two nominees attend the shareholders' meeting each year. They are well received by the board and the venture has proved very successful.

Films are a fruitful source of interest. Covering, as they do, practically every aspect of industry, one at least can usually be found which meets the needs of a particular group. It is necessary, however, to sound a note of caution in this respect. The too frequent appearance of a film on the agenda can tend to restrict free discussion and so defeat the aims of joint consultation.

Visitors

A limited number of visitors is nominated from the groups to attend the Council meetings. The visitors naturally do not participate in the proceedings; but the fact that they are there does extend the range of interest. They can see for themselves what is going on, and if their constituency is being properly represented.

We have been able to extend the scope of visits by reciprocal arrangements with other concerns which have joint consultation. Not only has this broadened the outlook by seeing how the 'other chap' is getting along, but return visits have resulted in a useful exchange of views.

Still learning

Compared with some companies, we are young in joint consultation. But perhaps we are just old enough to look back and see the wood from the trees. I feel that we have progressed a little way in this field—duly chastened by our mistakes but taking encouragement from our successes.

But we are still learning. After all, joint consultation is what you make it. Its opponents have condemned it as a time-waster, a complaints shop, a session of unrelieved boredom. It can be all these things, but it need not be, nor will it be, if the employees' interest is awakened and sustained. END

DECEMBER, 1958



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LEGAL Q & A

How an Amalgamation Affects Employees

Question. Our company, which is a public company, is being amalgamated with another and larger one. I understand that on the amalgamation taking effect all property rights of the old company will be automatically transferred to the second one. What is troubling me is the position of our employees. The second company intends to keep them on and pay them as before, but do their service agreements pass over at once to this company on the amalgamation?

Answer. On such an amalgamation it is usual for a court order to be made transferring from the transferor to the transferee company all the property belonging to the former, including rights and powers of every description, and duties and liabilities. These words have a wide legal scope but it has, however, been decided that they do not cover contracts of service. These are not assigned automatically to the second company. The legal principle is that a man is not to be compelled to serve a new master against his will.

The employees may be quite happy to carry on 'as before,' but rather than leave the matter in the air your company should announce to them that the undertaking is about to be transferred to a new company; give the necessary notice to terminate existing agreements; and inform them that the new company is prepared to

re-engage them on the same terms, and that continuing service after such and such a date will be taken as acceptance of the new offer.

Claiming an unpaid debt

Question. About ten years ago a customer bought goods on the instalment system, paid regularly for a year or two and then went to Australia without saying anything to us or settling the balance outstanding. We now hear that he has just returned to England. Can we sue him for the unpaid instalments?

Answer. As more than six years have elapsed since the date of the last payment or acknowledgment of the debt an action to recover the balance would not be successful. The normal time limit for suing on a contract is not extended because the debtor is, or has been, absent overseas.

Is a receipt still needed?

Question. Several firms with which I deal send a letter acknowledging my letters containing cheques or other remittances, saying that they thank me for my letter 'enclosing cheque or remittance' and often specifying the amount. But no stamped receipt is included in their letters. Is such a receipt necessary if the sum of money is over £2? I

understand that the recent Cheques Act does not deal with this situation.

Answer. You are right in thinking that the Cheques Act, 1957, does not help in solving this problem. It could be argued that no stamped receipt is necessary as all the firms are doing is to acknowledge receipt of a cheque (even though a cheque for a named amount) and not receipt of a sum of money, and that acknowledgment of the receipt of a document does not require to be stamped under the Stamp Act. But it is doubtful if the courts would uphold such a distinction.

The question has not been legally settled, though the better view seems to be that a stamped receipt should be given with this form of acknowledgment.

Tax on bonus payments

Question. My company is considering a scheme for recognizing long service of employees by payment of a cash bonus varying with the periods of service. If, for example, a bonus is paid after 15 years' service, would the whole of the bonus be taxable as the employee's income for the year in which it was received, or would the bonus money be treated as spread over the 15 years for tax purposes?

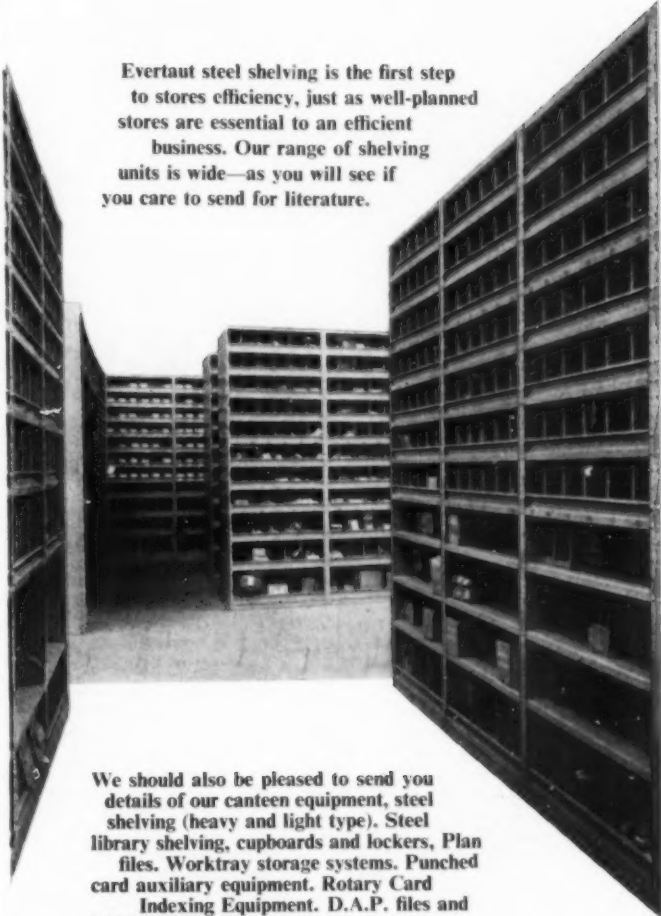
Answer. There are various legal decisions touching on this question, the effect of which is that a bonus paid in recognition of a certain number of years' service could not be spread over the 15 years.

The position may be different if a so-called bonus is really accumulated salary or wages (even though the employee could not have sued for it). But the scheme envisaged does not appear to be of this nature but to be a true bonus scheme.

Readers are invited to submit questions to be answered in this feature. All will be treated anonymously.

DECEMBER, 1958

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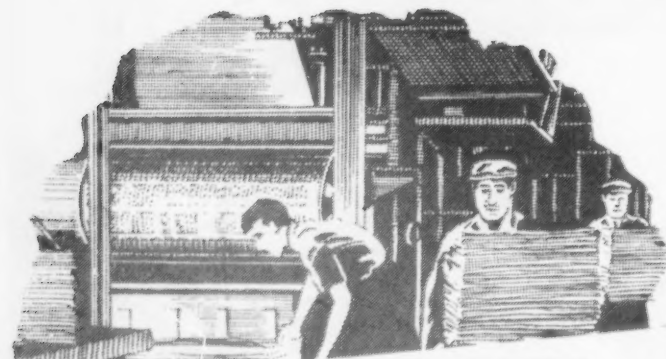
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No. 2452

Monday, November 3, 1958

Price 2

CREDIT MAKES NEWS!

Industry welcomes end of "squeeze"

WHY has credit suddenly become big news? A simple answer is that Trade expansion needs more credit and by removing restrictions on credit an extra flow of purchasing power is unleashed. That is big news of course, not just for the consumer but more for Commerce and Industry to whom credit is a barometer of Trade itself. In a modern economy, the ability to grant credit largely determines the overall volume of business.

But wait a moment! There must be a limit somewhere; if Traders give or take more credit than their resources will stand, credit turns into debts and confidence becomes suspicion.

How is this avoided?

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Powder Metal Parts

starts on page 74

brushes: with tin and copper powders it is used for the oil-less bearing.

Multi-layer strips. Another application is in bi-metal strips, such as contact strips of nickel-iron and tungsten copper and friction materials consisting of porous friction facings bonded to steel backing plates. The layers are completely welded together by the sintering process.

Refractory metals. The process is sometimes the best way of shaping refractory metals such as tungsten, molybdenum and platinum. The product is better and methods are cheaper and easier to control. Tantalum and niobium are produced in rod, sheet, wire or tubular shapes, and as fabricated parts.

Tantalum is of particular interest to the chemical industry as being resistant to nearly all acids. Niobium is used in atomic reactors.

Diamond impregnated tools are made from a mixture of iron powder and diamond dust.

Limitations

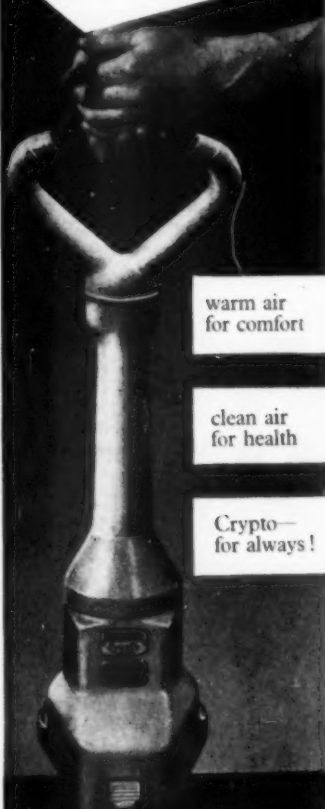
The chief limiting factor is the shape of the part. Even under high pressure, the powder will not flow round corners as molten metal will in die casting. Therefore, all powder movements must be arranged to occur in line with the punch pressure. Sometimes it is necessary to machine the finished piece.

As a general rule, the easiest parts to manufacture are those having a symmetrical outline or changing uniformly in contour.

Only long-run jobs? Generally speaking, it is seldom economic to apply powder metallurgy to the production of small quantities. But a recent application of the process

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to the making of a latch part showed that, although only 500 to 700 were required a year, it proved cheaper than stamping.

Research. Size, strength and durability of powdered parts have increased rapidly over the years. A new powder developed by the American Republic Steel Corporation has a minimum tensile strength of 100,000 lb. p.s.i. after heat treatment. Parts now weigh over 100 lb. and have a diameter measured in feet.

In this country companies like Sintered Products Ltd., who manufacture a wide range of powder metal parts, believe they are now only on the fringe of their potential. They expect to double their size within the next two years. *END*

Are Your Costs and Prices Realistic?

Does your thinking take account of changing values? So many things have gone up in price—labour, machinery, supplies, professional services and finished goods. This table, based on the retail price index, gives you a rough set of conversion factors for bringing your values up to date. For example, if you spent £100 on a machine in 1931, for which year the conversion factor is 2.87, then you could hardly be surprised if a similar machine now costs £287. It may actually cost more or less, but you would expect values generally to be around 2.8 times the 1931 level. This table will be brought up to date every quarter, but published monthly for handy reference.

Year	Con- version Factor	Year	Con- version Factor
1913	4.23	1935	2.94
1919	1.94	1936	2.87
1920	1.71	1937	2.73
1921	1.87	1938	2.70
1922	2.31	1939	2.62
1923	2.41	1946	1.76
1924	2.41	1947	1.67
1925	2.41	1948	1.54
1926	2.46	1949	1.50
1927	2.52	1950	1.46
1928	2.55	1951	1.33
1929	2.57	1952	1.22
1930	2.67	1953	1.19
1931	2.87	1954	1.16
1932	2.84	1955	1.12
1933	3.01	1956	1.06
1934	3.01	1957	1.02

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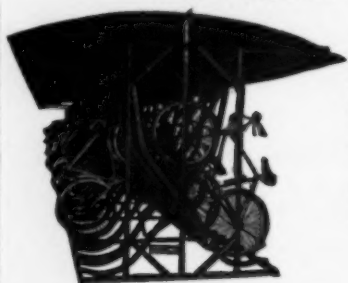
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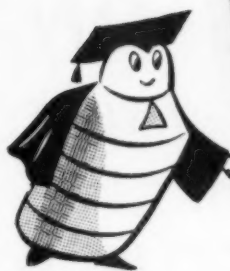
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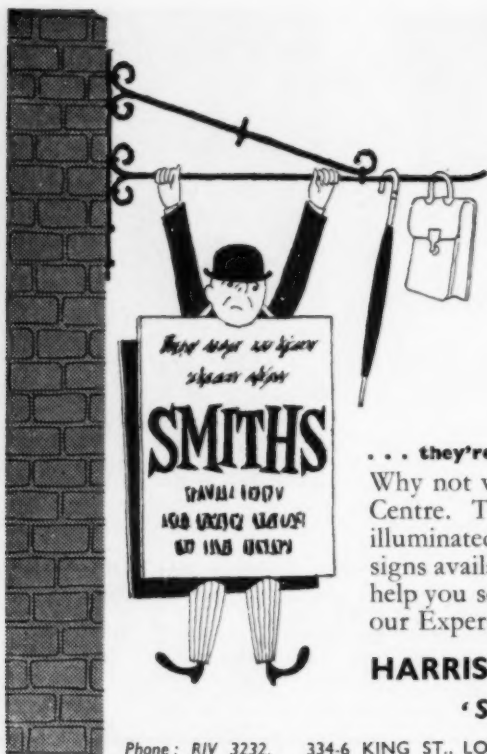
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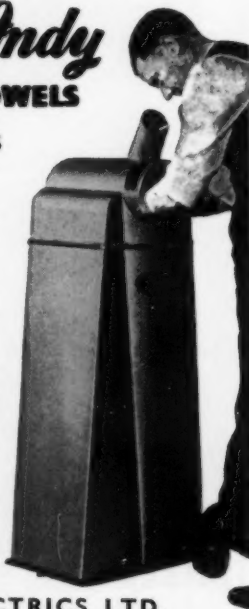
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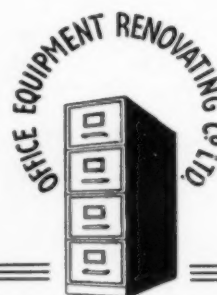
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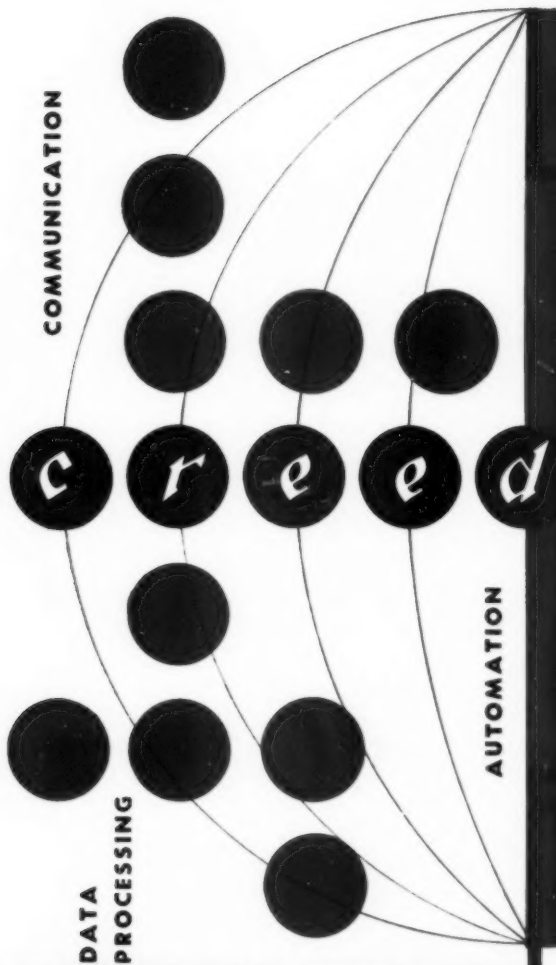
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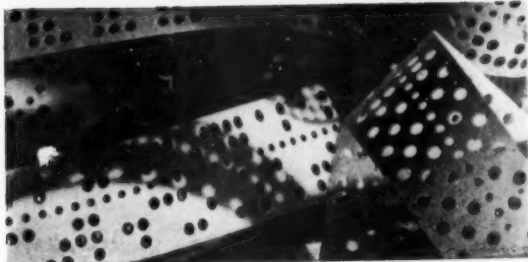
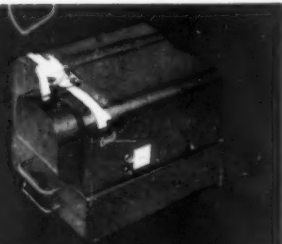
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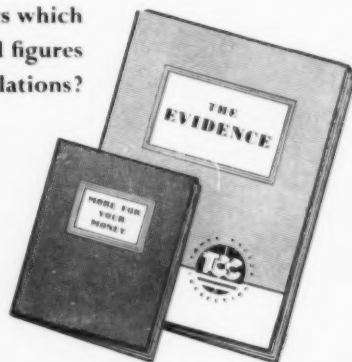
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